#6-01

From: [redacted]
To: Climate Council
Subject: [EXTERNAL] Electric Cooperatives
Date: Sunday, March 15, 2020 5:28:13 PM

Dear Climate Council members,

Please don't restrict the flexibility of our local Electric Coops when it comes to the sources of the electricity they provide to their members. Because we, the consumers, demand clean energy, the Coops have responded and are already purchasing carbon-free energy (about 75% currently).
Additional government mandates really aren't necessary at this time, and would take away the Coops' ability to respond to changing circumstances. Our Coops are small, customer-oriented, and nimble and responsive to what we, the members demand. This is their strength. They have a proven track record and don't need to be further regulated.

Carmen Cuthbertson, Kalispell
Member of Flathead Electric Coop

#6-02

From: [redacted]
To: Climate Council
Subject: [EXTERNAL] Comments about the Montana Climate Solutions Plan
Date: Sunday, March 15, 2020 1:24:58 PM

I read through your proposed plan and have the following comments, some specific and some general. Thirty seven pages is a lot to absorb, so maybe I missed catching some things. Expand your table of contents to include each of the sections that include specific plans, so one can see before starting to read, all of the areas to be covered.

1. Pg 4, 1B – change "University Social Scientist" to "University Scientist or Professional" – the word Social eliminates all kinds of scientists
2. Pg 5, 1C – add Virus Pandemics; define "community" to include all towns, cities, unincorporated areas, homeowner associations, tribes, reservations, universities, colleges (not just MUS) and public and private, large corporations (define size), large ranch or farm operations, Montana elected officials at the local, state and national level (this is critical to educate these officials who don't necessarily support or understand the advantages of going to non-fossil fuels, etc. I suggest you put together a directory of the lead people for all these groups in a Email Group, so all parties are kept up to date with this Plan and implementation of it. Add University Disaster Plans that are responsible for local infrastructure. Dan Stevenson, Associate Vice President University Services, is an engineer and has been behind MSU's changing interior and exterior light bulbs to more efficiencies and installing the deep wells for the Jake Jabs, NAH Building and Native American Hall that all thermal heat for these buildings and those surrounding them which is saving enormous amounts of energy use. He needs to be a key person on the Plan execution!
3. Pg 7-8, 1G – add support wilderness designations on BLM & USFS for gene diversification, migration routes, habitat protections. Expand/Protect Habitat Montana. Expand public habitat for bison as they are easier on the land and their grazing patterns promote native plant species. Support Federal Endangered Species Act and State laws (existing or new) to protect and expand protections for endangered species on Montana.
4. Pg 16, 2G-H – add ways for condo associations and homeowner associations to encourage the installation of community solar systems
5. Pg 14, 2D – you are way to easy on the PSC by just saying you will work with them. The 5 current republican commissioners are beholden to NWE and fossil fuels. You need to get laws passed or some kind of legal manner of them doing their job and forcing NWE, MT-Dakota, electric coops to change to non-fossil fuels, pollution -prevention, conservation.
6. I didn't see any mention of wind power – changing the laws to encourage companies and individuals to use wind power. Montana is the 4th windiest State and we are so far behind our neighboring states, even Texas.
7. Carbon Sequestration in 2P definitely needs research to make sure we don't do any damage to the Earth in other ways, like explosions, earth quakes. I hope you are working with Dr. Lee Spangler at MSU who has done lots of research on this topic.
8. Electric Grid 2K – need lots more work done on our electric grid in Montana to get to more strategic locations, to have a back up system, and I'm not sure why we promote manufacturing fossil fuel electricity in Montana poisoning our health and environment to carry this power out of state. Seems like this infrastructure should be owned and controlled by the State of Montana and not be subject to market profits, no backup, and unreliability-

lack of maintenance.

9. I didn't see a mention of mandatory managing/protecting/safety rules for pipelines and train track systems. For example, coal trains going through Montana do not cover the product from polluting the environment they go through; Canadian pipeline to be built is bringing across our soil product that is ruining the Earth (excavation and tremendous use of water) and going to the south to serve other countries in the world through shipping.
10. 2A building code improvements – very good – but this is why Legislature needs to be involved so they understand the built-in conservation methods. We need conservation programs for all government buildings plus education and encouragement to local schools, Montana businesses, etc. for existing buildings. The Montana Extension Service has a contractor training program in Bozeman http://weatherization.org/ [weatherization.org] They need more money and guidance to provide this service all over Montana. Additionally we need more money for lower-income Montanans to get their homes with more energy conservation.
11. Condo associations like mine were built 2008-2020 – all duplex buildings with shared water systems/meters so the association has to pay the water bill and divvy out the costs by owner, without knowing the usage of any unit owner. This should be illegal – every living unit should be metered to pay its own water, just like most do for electricity and gas. Additionally, contractors building these complexes put it old fashioning plantings, grass, sprinkler systems based on wells – this should be stopped and guidelines of these systems should be mandatory.
12. You should talk with the experts at the Environmental Defense Fund – they do amazing work all over the world with companies & governments to improve the environment and save money. They are in process of getting sponsors in Congress for the 100% Clean Economy Act. This is my summary of some of their work on energy that I wrote: Environmental Defense Fund put together a coalition of states, consumer, utility, labor and environmental justice groups to gain 150 co-sponsors for the 100% Clean Economy Act, currently before the U.S. House. Other EDF-led examples: Colorado passed a 2019 law mandating a 90% cut in climate pollution by 2050 and 50% by 2030; Illinois added 1,300 solar jobs in 2018 due to their Future Energy Jobs Act; Xcel Energy plans to go carbon-free by 2050 and cut climate pollution 80% by 2030; Duke Energy & Michigan's DTE Energy plan to cut their carbon pollution 50% by 2030 and net-zero by 2050. Montana should follow these footsteps to improve our health, environment, create jobs and cut costs. https://www.edf.org/climate [edf.org]
13. Other groups to include are the Montana political parties as they elect the officials that run our government and will have to carry on implementation of the Plan that the current Governor is putting in place. For example, here is the Montana Democratic Party platform stand: "As we confront global climate change, Montana Democrats believe that we must reduce our reliance on fossil fuels through a combination of energy conservation, energy efficiency, and the development of clean, renewable energy sources. We believe that we can achieve this goal AND create or provide transitions into good Montana jobs."

Thanks for doing all this work for the health and economy of Montana and its natural resources and wildlife, fisheries, wilderness, other public lands.

Patricia Simmons
[redacted]

#6-02

Bozeman, MT 59718

[redacted]

[redacted]

#6-03

From: [redacted]
To: Climate Council
Subject: [EXTERNAL] Public comment
Date: Monday, March 16, 2020 10:11:04 AM

Greetings , Re:Greenhouse gas legislation

Montana has a record high level of electricity production without green house gas. We do not need additional legislation on this topic. Montana's Coops are proven leaders in reducing greenhouse gas emissions and in using clean energy sources.
Thank you
Don and Chris Hettinger

#6-04

From: [redacted]
To: Climate Council
Subject: [EXTERNAL] Comment re Climate Solutions Council Plan
Date: Monday, March 16, 2020 3:22:34 PM

Dear Governor Bullock and the Climate Solutions Council,

I want to thank you for putting forth a Montana Climate Plan to reach net zero emissions in electricity generation b y 2035 and net zero carbon emissions overall by 2050. Per the most recent IPCC report, we must absolutely reach these goals worldwide or suffer extreme consequences as a result of climate change.

I am a member of Citizens' Climate Lobby and live in Montana. **We believe the most effective and efficient path forward for lowering emissions in Montana is with the help of a national, market and incentive-based Carbon Fee and Dividend policy. In particular we support HR 763, The Energy Innovation and Carbon Dividend Act.** (EnergyInnovationAct.org [citizensclimatelobby.us19.list-manage.com]) HR 763 provides an economy-wide, market-based mechanism to reach our shared ambitious, but reachable goals.

A slow, predictable rising pollution fee on fossil fuels will bolster all other Montana initiatives for efficiency, alternative energy, storage, grid upgrades, and support carbon sequestration in industry, agriculture and forestry.

Carbon fee and dividend is:

Effective: Reduces emissions by 40% in first 12 years using incentives instead of regulations

Good for People: Saves lives with reduced pollution and puts money in people's pockets to help during the transition. Most low- and middle-income families will receive more back in dividends than in increased fossil fuel costs.

Good for the Economy: Will create 2.1 million new jobs in local communities across the US including high-paid construction and electrical jobs.

Bipartisan: Appeals to most Americans regardless of political affiliation.

Revenue Neutral: By the government not keeping any of the money, this provides a smoother process for getting this legislation passed.

Please consider adding support for a national Carbon Fee and Dividend policy, or HR 763 specifically, into the Montana Climate Plan.

Sincerely,

John Hoffland
[redacted]
Helena, MT 59601
[redacted]

#6-05

From: [redacted]
To: Climate Council
Subject: [EXTERNAL] Montana Climate Solutions Council
Date: Monday, March 16, 2020 8:22:31 AM

The recommendations in the Montana climate council report are scientifically sound and urgently needed.

There is global consensus amongst world scientists on the rising climate crisis. Climate change is a global issue, and all levels of government in every part of the world must act to address this it; Montana is not special in this regard. Ignoring long term climate issues for the sake of cheap energy in the now would be short sighted and irresponsible; we need renewable energy sources as soon as possible. Solar and wind technologies are ready to go and should be scaled up. Electric vehicles are becoming widespread and the infrastructure to support them ought to increase. Because Montana is a state dependent on agriculture, resources need to be shared with farmers in the best ways for them to help mitigate and adjust to climate change scenarios. The Montana climate assessment, issued in 2017, is clear that climate change will affect forestry, agriculture, and our water sources negatively. Montana must prepare to adapt to these changes and work to mitigate them to the best of our ability.

Given that we have but one planet, common sense dictates that we must take every action to maintain its health in order for the human race to survive.

The recommendations in this report are scientifically sound and urgently needed.

Sasha Loewen
Student
College of Agriculture, MSU
Bozeman, Montana

#6-06

From: [redacted]
To: Climate Council
Subject: [EXTERNAL] proposal
Date: Monday, March 16, 2020 10:10:45 AM

Montana Climate Solutions Council

We get our power from a electric cooperative. I do not feel we need more government mandates are not needed on them as they are leaders in reducing greenhouse-gas emissions and are moving toward using clean energy sources. We do not need more government interference when the coops are working and doing a good job. It will just cause the price of electricity to go high without benefits.

Thank you

Wayne Miller

#6-07

From: [redacted]
To: Climate Council
Subject: [EXTERNAL] Reducing greenhouse-gas emissions
Date: Monday, March 16, 2020 3:40:41 PM

Montana's electric cooperatives are proven leaders in reducing greenhouse-gas emissions, and in using clean energy
sources. Therefore I do not believe additional government mandates are needed.

Darlene Navarro
Bozeman, MT

#6-08

From: [redacted]
To: Climate Council
Subject: [EXTERNAL] Reducing greenhouse-gas emissions
Date: Monday, March 16, 2020 3:44:15 PM

Montana's electric cooperatives are proven leaders in reducing greenhouse-gas emissions, and in using clean energy sources. Therefore, I do not believe additional government mandates are needed.

Salvador Navarro
Bozeman, MT

#6-09

From: [redacted]
To: Climate Council
Subject: [EXTERNAL] Montana Climate Solutions
Date: Monday, March 16, 2020 7:31:42 AM

Your plan relies heavily on hydro power to be the backbone of energy needs.
The lower Missouri River dams that generate electricity are slowly filling with silt rendering them useless.
The dams on the Snake River are once again or still in the sights of those who think salmon are more important than people.Breeching the dams is a very real possibility
In summary, the Montana Electric Cooperatives are doing an excellent job of securing "carbon free"power and are certainly capable of continuing to do so.
If it isn't broke don't fix it.
Eugene Novacek
[redacted]

Sent from my Verizon, Samsung Galaxy Tablet

#6-10

From: [redacted]
To: Climate Council
Subject: [EXTERNAL] BioChar and pyrogenic carbon as climate opportunities
Date: Monday, March 16, 2020 4:56:08 PM

Dear Climate Panel, Biochar, a product that can be manufactured in Montana from small diameter material from fuels treatments across the state can be incorporated into our agriculture sector to improve productivity, increase water holding capacity, decrease fossil-fuel derived inputs, and store carbon in the soil profile for the long run. Biochar has also been an effective remediation for mine wastes.

An opportunity exists for local manufacture of biochar products that can add value to woody biomass that currently is a significant cost center for lumber mills and agencies treating fuels for fire hazard reduction where a market for low value material is soft or non-existent.

I would be pleased to provide contacts and literature on the opportunity and may have the chance to do this before the comment deadline. For now, I wanted to raise the opportunity in general.

Thanks for your consideration.

#6-11

From: [redacted]
To: Climate Council
Subject: [EXTERNAL] Let"s Combat Climate Change Together!
Date: Monday, March 16, 2020 8:28:18 PM

Dear Governor Bullock and the Climate Solutions Council,

Thank you for all your hard work in developing a landmark Montana Climate Plan. I am a member of Citizens' Climate Lobby and live in Montana. We believe the most effective and efficient path forward for lowering emissions in Montana is with the help of a national, market and incentive-based Carbon Fee and Dividend policy. In particular we support HR 763, The Energy Innovation and Carbon Dividend Act. (EnergyInnovationAct.org [citizensclimatelobby.us19.list-manage.com])

A slow, predictable rising pollution fee on fossil fuels will bolster all other Montana initiatives for efficiency, alternative energy, storage, grid upgrades, and support carbon sequestration in industry, agriculture and forestry.

Carbon fee and dividend is:

Effective: Reduces emissions by 40% in first 12 years using incentives instead of regulations

Good for People: Saves lives with reduced pollution and puts money in people's pockets to help during the transition

Good for the Economy: Will create 2.1 million new jobs in local communities across the US

Bipartisan: Appeals to most Americans regardless of political affiliation.

Revenue Neutral: By the government not keeping any of the money, this provides a smoother process for getting this legislation passed.

Please consider adding support for a national Carbon Fee and Dividend policy, or HR 763 specifically, into the Montana Climate Plan.

Sincerely,
Merissa Underwood
Miss Montana USA 2020

#6-12

From: [redacted]
To: Climate Council
Subject: [EXTERNAL] Comments on draft Montana Climate Solutions plan/recommendations
Date: Tuesday, March 17, 2020 9:12:35 PM

Dear Council Members,

Thank you for the draft Montana Climate Solutions plan and for the opportunity to comment. While I have some specific suggestions for improvements below, I urge you to begin immediate implementation of measures to reduce carbon emissions.

Recommendations 1A through 1H should be funded and implemented. Adequate support for climate science is essential to our ability to understand risks and prepare for change. We need a better funded Montana Climate Office and increased state support to communities working to reduce carbon emissions and plan for climate adaptation.

Recommendations 2A through 2E and 2G through 2K are essential for Montana to reduce carbon emissions. Montana needs to support energy efficiency and conservation to save Montanans money, protect public health, and protect agriculture and recreation industry from the worst effects of climate change. Also critical are expanded shared solar, incentives to develop utility scale storage development, and incentives for solar ready & solar integrated design & building codes. A statewide energy efficiency standard is a key step in increasing energy efficiency.

Recommendation 2Q would increase allowable systems size for distributed generation systems – I suggest raising the cap up to 100 kW for residences and up to 250 kW for institutional installations. *This would benefit schools, libraries, and other public buildings – saving taxpayer dollars and creating educational opportunities.*

Voluntary controls on oil and gas development do not work. The industry has had decades to curb carbon emissions voluntarily and has failed to do so. Methane emissions from oil and gas development can be controlled and should be required.

Carbon capture and sequestration are unproven technologies and are not an appropriate way to address carbon emissions of coal-fired electricity. Instead, we should focus on reducing reliance on coal-fired electricity.

Please support adoption of low emission vehicle standards and actions to incentivize electric vehicles.

Please encourage and support local communities that choose to set strong carbon emission reduction goals.

In addition, Montana's renewable energy standard should be raised to 80% by 2035. This is achievable and will create jobs and save money.

There is a need to replace the coal severance tax as coal sales drop -- a tax on electricity could replace the coal severance tax, and also fund worker retraining programs and pension security for fossil fuel workers. Please consider adding the above ideas to the Solutions plan.

Vicki Watson, Missoula, MT

#6-13

From: [redacted]
To: Climate Council
Subject: [EXTERNAL] Comments on draft Montana Climate Solutions Plan
Date: Tuesday, March 17, 2020 4:22:26 PM

Council Members,

Thank you for your efforts in producing the draft Montana Climate Solutions plan. In addition to the specific comments below, please make it a priority that implementation begin immediately for those measures which can begin right away and that will help reduce greenhouse gas emissions.

-- Please support efforts to expand Montana's ability to understand climate risks and prepare for change. In particular, recommendations 1A through 1H should be funded and acted upon.

-- Montana needs more accessible climate science. Please support a larger Montana Climate Office with more staff, stronger Montana University System climate coordination, research and funding, and increased support from the state to communities so they can develop greenhouse gas reduction and climate adaptation strategies.

-- Recommendations 2A through 2E and 2G through 2K are essential for Montana to reduce greenhouse gas emissions and avoid locking into new fossil fuel infrastructure. Montana is deficient in programs and funding to support energy efficiency and conservation and the key strategies identified, if enacted swiftly and with financial support, are essential. They will save Montanans money while improving public health.

-- A statewide energy efficiency standard would save all Montanans money.

-- Raising the size cap on distributed generation solar systems (aka rooftop solar) would benefit schools, libraries, and other public buildings in their community - saving taxpayer dollars and creating educational opportunities for our youth.

-- Support adoption of low emission vehicle standards and actions that will incentivize/promote/enhance electric vehicles.

-- Please encourage and support community goal setting, energy data collection across sectors, and planning efforts to reduce emissions and save money in local communities.

-- Voluntary controls on oil and gas development are inappropriate. The industry has had decades to voluntarily curb greenhouse gas emissions and has failed to do so. Methane emissions from oil and gas development are easily controlled and should be required. The time has past for voluntary commitments from this greenhouse gas producing sector.

-- Carbon capture and sequestration is not an appropriate climate solution for coal-fired electricity. This unproven technology only makes dirty, expensive coal plants even more expensive and risky. The final recommendations should focus on reducing reliance on coal-fired electricity instead of relying on misguided, expensive, risky, and unproven technology.

Thank you,

--
Jackie Foster
[redacted]
Dillon, MT

#6-14

From: [redacted]
To: Climate Council
Subject: [EXTERNAL] Comments on draft Montana Climate Solutions Plan
Date: Tuesday, March 17, 2020 3:18:23 PM

Council Members,

Thank you for your efforts in producing the draft Montana Climate Solutions plan. In addition to the specific comments below, please make it a priority that implementation begin immediately for those measures which can begin right away and that will help reduce greenhouse gas emissions.

-- Please support efforts to expand Montana's ability to understand climate risks and prepare for change. In particular, recommendations 1A through 1H should be funded and acted upon.

-- Montana needs more accessible climate science. Please support a larger Montana Climate Office with more staff, stronger Montana University System climate coordination, research and funding, and increased support from the state to communities so they can develop greenhouse gas reduction and climate adaptation strategies.

-- Recommendations 2A through 2E and 2G through 2K are essential for Montana to reduce greenhouse gas emissions and avoid locking into new fossil fuel infrastructure. Montana is deficient in programs and funding to support energy efficiency and conservation and the key strategies identified, if enacted swiftly and with financial support, are essential. They will save Montanans money while improving public health.

-- A statewide energy efficiency standard would save all Montanans money.

-- Raising the size cap on distributed generation solar systems (aka rooftop solar) would benefit schools, libraries, and other public buildings in their community - saving taxpayer dollars and creating educational opportunities for our youth.

-- Support adoption of low emission vehicle standards and actions that will incentivize/promote/enhance electric vehicles.

-- Please encourage and support community goal setting, energy data collection across sectors, and planning efforts to reduce emissions and save money in local communities.

-- Voluntary controls on oil and gas development are inappropriate. The industry has had decades to voluntarily curb greenhouse gas emissions and has failed to do so. Methane emissions from oil and gas development are easily controlled and should be required. The time has past for voluntary commitments from this greenhouse gas producing sector.

-- Carbon capture and sequestration is not an appropriate climate solution for coal-fired electricity. This unproven technology only makes dirty, expensive coal plants even more expensive and risky. The final recommendations should focus on reducing reliance on coal-fired electricity instead of relying on misguided, expensive, risky, and unproven technology.

Thank you,

--
Roger Kirk
[redacted]
BOZEMAN, MT

#6-15

From: [redacted]
To: Climate Council
Subject: [EXTERNAL] Government mandates
Date: Tuesday, March 17, 2020 3:29:03 PM

Montana Electric Co-ops are top notch green house gas emissions eliminators.
I **FIRMLY believe we don't need additional government mandates on it. They're allready all over it!!!**
Thomas

#6-16

From: [redacted]
To: Climate Council
Subject: [EXTERNAL] Climate Council Comments
Date: Tuesday, March 17, 2020 4:04:49 PM
Attachments: Governor"s Council for Climate Solutions.pdf

Hello,

Please find my comments on the recommendations attached.

Cheers,
Caroline

Caroline Lauer
Pronouns [studentaffairs.duke.edu]: she/her

First, thank you to everyone on the council for your hard work. It is great to see this effort happening and I am proud to see the Montana state government move forward on this critical issue. While this document is an excellent accomplishment, it is only one of the first steps in a long journey. Now we must come together as a state to quickly develop the funding, support, and technical assistance so that we can plan for the effects of climate change and rapidly reduce our greenhouse gas emissions by 2030.

I want to express my strong support for recommendations 1A, 1B, 1C, and 1D within the adaptation part of the plan. As a co-author of *Climate Ready Missoula*, I can say firsthand that our resiliency plan would not have been possible without the local climate projections that were readily available because of the Montana Climate Office. This office needs additional staffing and capacity as more communities across the state begin climate adaptation planning. Even moreso, the support from social scientists at the University of Montana was critical throughout the entire process as we sought to translate dense science into digestible pieces of information for community members. We need to continue to support these resources, as well as expand them, as adaptation planning is critical. A strong adaptation plan can lead to municipalities saving money in the future. Moving forward, I would love to see the state support and fund a robust platform and network where communities can learn from one another, specifically related to climate resiliency planning. While Missoula was assisted by the Geos Institute, via their Climate Ready Communities program, we also had to adapt their process to make it work for a Montana community, and we have many best practices and tips that we could share with other communities. State support to do so would greatly enhance our ability to do so, as well as the quality of that exchange. Lastly, I'd like to underscore the importance of the strategy to "support local governments to integrate flood, disaster, and wildfire protection planning with community land use planning and decisions when requested by local officials." We must think about this work holistically, and climate mitigation and adaptation work need to be incorporated into our decisions about where and how we build. Once this work moves into the implementation phase, I would like to see a strong web presence where we can centralize adaptation planning best practices for Montana communities, as well as financial support, perhaps in the form of grants, to help fund the work of communities mentoring other communities.

I'd also like to express my strong support for the mitigation strategies, especially recommendations 2A - 2F, which are essential for our state to reduce GHG emissions rapidly and avoid future stranded assets by locking ourselves in to new fossil fuel infrastructure. We must move forward immediately with all of the energy efficiency and conservation strategies identified through dedicated funding and staffing.

Thank you, again, for your thoughtful work on all of this. I'm excited to see this plan make a tangible difference in our state.

#6-17

From: [redacted]
To: Climate Council
Subject: [EXTERNAL] Montana Electric Cooperatives
Date: Tuesday, March 17, 2020 10:45:56 AM

Montana's electric cooperatives are proven leaders in reducing greenhouse-gas emissions and in using clean energy solutions.

We do not believe additional government mandates are needed.

Tim and Karen Mueller

--
Envy was once considered to be one of the seven deadly sins before it became one of the most admired virtues under its new name, 'social justice.' Thomas Sowell

#6-18

From: [redacted]
To: Climate Council
Subject: [EXTERNAL] Green House emissions
Date: Tuesday, March 17, 2020 11:31:03 AM

Montana's electric cooperatives are proven leaders in reducing greenhouse gas emissions and in using clean energy sources. Therefore, I do not believe additional government mandates are needed!
Sent from my iPhone

#6-19

From: [redacted]
To: Climate Council
Subject: [EXTERNAL] Comment on the draft "Montana Climate Solutions Plan
Date: Tuesday, March 17, 2020 10:47:03 AM

Dear Council Members,
I cannot speak to the plan's overall adequacy, but it does appear to be fairly comprehensive and even handed. I sincerely hope that this is a serious effort that is honestly intended for prompt implementation to address its stated goal. There is no time to lose. I realize that here in Montana there is a great level of denial of any need for human action to reduce our contribution to global warming, and that the proposals listed in this draft plan will certainly be met with stiff opposition.

I particularly applaud certain specific recommendations as being urgently necessary and courageous. The recommendations listed below strike me as crucially important.

1B: ESTABLISH A CLIMATE ADVISORY COUNCIL WITHIN THE MONTANA UNIVERSITY SYSTEM TO COORDINATE RESEARCH AND ASSESSMENT NEEDS AND FACILITATE EXTENSION OF CLIMATE INFORMATION AND SERVICES TO MONTANANS;

1D: ADAPT MONTANA'S BUILT ENVIRONMENT TO CLIMATE CHANGE;

2A: MODERNIZE MONTANA BUILDING ENERGY CODES AND ADMINISTRATIVE PROCESSES TO PROMOTE ENERGY EFFICIENCY AND OTHER CLIMATE BENEFITS;

2B: ESTABLISH A GRADUATED ENERGY EFFICIENCY STANDARD, A DEMAND RESPONSE STANDARD, AND AN ENERGY STORAGE STANDARD FOR THE STATE'S INVESTOR OWNED UTILITIES;

2G: ENCOURAGE EXPANDED COMMUNITY SOLAR DEVELOPMENT AND ENACT POLICY TO ENABLE SHARED SOLAR FOR INVESTOR OWNED UTILITIES;

2H: PROVIDE INCENTIVES FOR SOLAR-READY AND SOLAR-INTEGRATED DESIGN AND BUILDING;

2I: ENCOURAGE GREATER UTILITY SCALE RENEWABLE ENERGY DEVELOPMENT THROUGH REDUCING PROPERTY TAXES ON NEW RENEWABLE ENERGY IN MONTANA;

2K: ADVANCE EFFORTS TO TAKE ADVANTAGE OF A COORDINATED WESTERN ELECTRICITY MARKET;

2M: ADVANCE COMPREHENSIVE STRATEGIES TO DEVELOP AND EXPAND ELECTRIC VEHICLE INFRASTRUCTURE AND ACCESSIBILITY;

2R: INCREASE AND UPDATE THE STATE RENEWABLE ENERGY PORTFOLIO STANDARD; and

3F: PREPARE MONTANA'S WORKFORCE FOR OPPORTUNITIES IN A CHANGING ECONOMY AND IN SECTORS IMPORTANT TO CLIMATE MITIGATION AND

#6-19

ADAPTATION.

I appreciate the opportunity to comment on this proposal. I hope its advance is expedited with greatest urgency.

Thank you,
Bill

William Thompson
[redacted]
Hamilton, MT 59840

[redacted]

#6-20

From: [redacted]
To: Climate Council
Subject: [EXTERNAL] Comments on draft Montana Climate Solutions Plan
Date: Tuesday, March 17, 2020 3:15:28 PM

Council Members,

Thank you for your efforts in producing the draft Montana Climate Solutions plan. In addition to the specific comments below, please make it a priority that implementation begin immediately for those measures which can begin right away and that will help reduce greenhouse gas emissions.

-- Please support efforts to expand Montana's ability to understand climate risks and prepare for change. In particular, recommendations 1A through 1H should be funded and acted upon.

-- Montana needs more accessible climate science. Please support a larger Montana Climate Office with more staff, stronger Montana University System climate coordination, research and funding, and increased support from the state to communities so they can develop greenhouse gas reduction and climate adaptation strategies.

-- Recommendations 2A through 2E and 2G through 2K are essential for Montana to reduce greenhouse gas emissions and avoid locking into new fossil fuel infrastructure. Montana is deficient in programs and funding to support energy efficiency and conservation and the key strategies identified, if enacted swiftly and with financial support, are essential. They will save Montanans money while improving public health.

-- A statewide energy efficiency standard would save all Montanans money.

-- Raising the size cap on distributed generation solar systems (aka rooftop solar) would benefit schools, libraries, and other public buildings in their community - saving taxpayer dollars and creating educational opportunities for our youth.

-- Support adoption of low emission vehicle standards and actions that will incentivize/promote/enhance electric vehicles.

-- Please encourage and support community goal setting, energy data collection across sectors, and planning efforts to reduce emissions and save money in local communities.

-- Voluntary controls on oil and gas development are inappropriate. The industry has had decades to voluntarily curb greenhouse gas emissions and has failed to do so. Methane emissions from oil and gas development are easily controlled and should be required. The time has past for voluntary commitments from this greenhouse gas producing sector.

-- Carbon capture and sequestration is not an appropriate climate solution for coal-fired electricity. This unproven technology only makes dirty, expensive coal plants even more expensive and risky. The final recommendations should focus on reducing reliance on coal-fired electricity instead of relying on misguided, expensive, risky, and unproven technology.

Thank you,

--
Ann Wool
[redacted]
Sillon, MT

#6-21

From: [redacted]
To: Climate Council
Subject: [EXTERNAL] Public feedback to draft Climate Solutions Plan
Date: Wednesday, March 18, 2020 6:59:22 PM
Attachments: Public feedback to draft Montana Climate Solutions Plan.pdf

---

Dear Patrick and Colleagues,
Please find attached my feedback to the draft recommendations. I would be happy to discuss and hope to assist in the further development of the Plan.
Best regards,
Jay Barlow

#6-21

18 March 2020

Subject: Public comment to draft Montana Climate Solutions Plan

Dear Montana Climate Solutions Council,

Thank you for your efforts in producing the current draft recommendations, and for your consideration of the below feedback in the further development of the Climate Solutions Plan.

SPECIFIC COMMENTS
(In order of appearance in draft Plan)

1. Section 1: Include financial sector in considerations of climate adaptation.

2. Section 1: Present adaptation recommendations in terms of "no-regrets" actions.

3. Section 2, Recommendation O: Make reference to coalbed methane and coal-mine methane for inclusion in a statewide inventory of non-CO_2 emissions.

RESPONSES TO GUIDING QUESTIONS
(In order of appearance in draft Plan)

Section 2: *How should the state consider future renewable energy requirements for energy providers?*

Achieving the overarching goal of economy-wide decarbonization will be best supported by policies for greenhouse gas reductions, rather than policies for renewable energy generation and capacity. The Council's recommendation for net-neutrality of greenhouse gas emissions can therefore supersede a renewable portfolio standard and alleviate Council dissent around Recommendation 2(R).

The goal for net-neutrality should additionally:

- Appear as a distinct, overarching recommendation in the Plan
- Indicate a trajectory in addition to a point-year target
- Consider a cross-sectoral carbon pricing policy as the primary instrument supporting attainment of the goal
- Emphasize emissions mitigation and minimize reliance on negative-emissions solutions
- Include a mechanism for periodic increases in ambition, for example, based on five-year stocktaking
- Be supported by a roadmap of specific measures with an indication of precedence and costs (such as the expected study indicated in the draft Plan).

Section 2: *How should the Public Service Commission evaluate greenhouse gas impacts of decisions and rate-payer risks?*

Decisions of future infrastructure investments should be evaluated by cost-benefit analysis employing a shadow carbon price. This process can highlight social costs and the effects of potential regulatory carbon prices that are not currently captured in decision-making. A range of prices can be used for this analysis, including the range from the US Interagency Working Group on the Social Cost of Greenhouse Gases and the high and low estimates from the High-Level Commission on Carbon Prices.

Section 2: *How should the state consider possible economy-wide emissions policy proposals such as a price on carbon or cap and trade proposals?*

Carbon pricing is a cross-sectoral measure that needs greater emphasis in the support of a net-neutrality emissions goal for Montana. The choice of a quantity-based (cap-and-trade) or price-based (tax) instrument is not as important as designing the chosen instrument well. (Hybrids between these two also exist.) There are design considerations that will need to reflect Montana's specific circumstances, for instance: a limited number of high-emitting installations, interstate exchange of energy, and limited administrative capacity in comparison to larger states. An appropriate place to begin is a carbon pricing options evaluation for the State of Montana. The draft recommendations to explore carbon-market incentives can be recast as a distinct recommendation to support such an economy-wide evaluation.

Section 2: *How can Montana best lead on efforts to reduce greenhouse gas emissions? How should the state consider policy options and solutions in the context of potential Federal policy or policies?*

In connection to above, in the evaluation of carbon pricing policy options deference should be given to a national-level carbon pricing system. Montana should proceed with evaluating state- or regional-level systems in case a national-level system is not developed in the near future. An essential design feature of the pursued carbon pricing system should be its adaptability to national and international regulatory developments.

Section 2: *How should the state consider new technologies in planning for greenhouse gas mitigation like renewable hydrogen or modular nuclear?*

The current Climate Solutions Plan will be strengthened by emphasizing those technologies and resources for economy-wide decarbonization that are presently proven. Recommendations for innovation (Section 3) can support further development of nascent technologies that may play a future role in emissions mitigation. Embracing this approach in the Plan may alleviate Council dissent around Recommendation 2(P).

Respectfully,

Jay Barlow
Missoula, MT

#6-22

From: [redacted]
To: Climate Council
Subject: [EXTERNAL] Comments on draft Montana Climate Solutions Plan
Date: Wednesday, March 18, 2020 5:15:19 PM

Council Members,

Thank you for your efforts in producing the draft Montana Climate Solutions plan. In addition to the specific comments below, please make it a priority that implementation begin immediately for those measures which can begin right away and that will help reduce greenhouse gas emissions.

-- Please support efforts to expand Montana's ability to understand climate risks and prepare for change. In particular, recommendations 1A through 1H should be funded and acted upon.

-- Montana needs more accessible climate science. Please support a larger Montana Climate Office with more staff, stronger Montana University System climate coordination, research and funding, and increased support from the state to communities so they can develop greenhouse gas reduction and climate adaptation strategies.

-- Recommendations 2A through 2E and 2G through 2K are essential for Montana to reduce greenhouse gas emissions and avoid locking into new fossil fuel infrastructure. Montana is deficient in programs and funding to support energy efficiency and conservation and the key strategies identified, if enacted swiftly and with financial support, are essential. They will save Montanans money while improving public health.

-- A statewide energy efficiency standard would save all Montanans money.

-- Raising the size cap on distributed generation solar systems (aka rooftop solar) would benefit schools, libraries, and other public buildings in their community - saving taxpayer dollars and creating educational opportunities for our youth.

-- Support adoption of low emission vehicle standards and actions that will incentivize/promote/enhance electric vehicles.

-- Please encourage and support community goal setting, energy data collection across sectors, and planning efforts to reduce emissions and save money in local communities.

-- Voluntary controls on oil and gas development are inappropriate. The industry has had decades to voluntarily curb greenhouse gas emissions and has failed to do so. Methane emissions from oil and gas development are easily controlled and should be required. The time has past for voluntary commitments from this greenhouse gas producing sector.

-- Carbon capture and sequestration is not an appropriate climate solution for coal-fired electricity. This unproven technology only makes dirty, expensive coal plants even more expensive and risky. The final recommendations should focus on reducing reliance on coal-fired electricity instead of relying on misguided, expensive, risky, and unproven technology.

Thank you,

--
Rebecca Canright
[redacted]
Asbury, NJ
Asbury

#6-23

From: [redacted]
To: Climate Council
Subject: [EXTERNAL] Comments on draft Montana Climate Solutions Plan
Date: Wednesday, March 18, 2020 5:13:41 PM

Council Members,

Thank you for your efforts in producing the draft Montana Climate Solutions plan. In addition to the specific comments below, please make it a priority that implementation begin immediately for those measures which can begin right away and that will help reduce greenhouse gas emissions.

-- Please support efforts to expand Montana's ability to understand climate risks and prepare for change. In particular, recommendations 1A through 1H should be funded and acted upon.

-- Montana needs more accessible climate science. Please support a larger Montana Climate Office with more staff, stronger Montana University System climate coordination, research and funding, and increased support from the state to communities so they can develop greenhouse gas reduction and climate adaptation strategies.

-- Recommendations 2A through 2E and 2G through 2K are essential for Montana to reduce greenhouse gas emissions and avoid locking into new fossil fuel infrastructure. Montana is deficient in programs and funding to support energy efficiency and conservation and the key strategies identified, if enacted swiftly and with financial support, are essential. They will save Montanans money while improving public health.

-- A statewide energy efficiency standard would save all Montanans money.

-- Raising the size cap on distributed generation solar systems (aka rooftop solar) would benefit schools, libraries, and other public buildings in their community - saving taxpayer dollars and creating educational opportunities for our youth.

-- Support adoption of low emission vehicle standards and actions that will incentivize/promote/enhance electric vehicles.

-- Please encourage and support community goal setting, energy data collection across sectors, and planning efforts to reduce emissions and save money in local communities.

-- Voluntary controls on oil and gas development are inappropriate. The industry has had decades to voluntarily curb greenhouse gas emissions and has failed to do so. Methane emissions from oil and gas development are easily controlled and should be required. The time has past for voluntary commitments from this greenhouse gas producing sector.

-- Carbon capture and sequestration is not an appropriate climate solution for coal-fired electricity. This unproven technology only makes dirty, expensive coal plants even more expensive and risky. The final recommendations should focus on reducing reliance on coal-fired electricity instead of relying on misguided, expensive, risky, and unproven technology.

Thank you,

--
Littlebird Parks
[redacted]
Bigfork , MT

#6-24

From: DEQ Communications Team
To: Climate Council
Subject: FW: General Comment,
Date: Wednesday, March 18, 2020 5:11:44 PM

From: [redacted]
Sent: Wednesday, March 11, 2020 12:42 PM
To: DEQ Communications Team <DEQCommunicationsTeam@mt.gov>
Subject: General Comment,

Hello. I am a member of the beartooth electric co-operative.please reconsider any actions against this co-op, because it has been a proven leader in reducing greenhouse-gas emissions, and is currently using clean energy sources. I do not believe that any additional gov. mandates are needed. I own a place in Clark, wyoming, which is served by the beartooth electric co-op. it is the only electricity available to us, and almost all of us are senior citizens, which rely on reasonable electric power. any large increases in cost, can and will affect most of us. sincerely yours, Noel T Gascoigne, Clark, Wyoming

- Noel Gascoigne

#6-25

From: [redacted]
To: Climate Council
Subject: [EXTERNAL] Comments on draft Montana Climate Solutions Plan
Date: Wednesday, March 18, 2020 5:15:17 PM

Council Members,

Thank you for your efforts in producing the draft Montana Climate Solutions plan. In addition to the specific comments below, please make it a priority that implementation begin immediately for those measures which can begin right away and that will help reduce greenhouse gas emissions.

-- Please support efforts to expand Montana's ability to understand climate risks and prepare for change. In particular, recommendations 1A through 1H should be funded and acted upon.

-- Montana needs more accessible climate science. Please support a larger Montana Climate Office with more staff, stronger Montana University System climate coordination, research and funding, and increased support from the state to communities so they can develop greenhouse gas reduction and climate adaptation strategies.

-- Recommendations 2A through 2E and 2G through 2K are essential for Montana to reduce greenhouse gas emissions and avoid locking into new fossil fuel infrastructure. Montana is deficient in programs and funding to support energy efficiency and conservation and the key strategies identified, if enacted swiftly and with financial support, are essential. They will save Montanans money while improving public health.

-- A statewide energy efficiency standard would save all Montanans money.

-- Raising the size cap on distributed generation solar systems (aka rooftop solar) would benefit schools, libraries, and other public buildings in their community - saving taxpayer dollars and creating educational opportunities for our youth.

-- Support adoption of low emission vehicle standards and actions that will incentivize/promote/enhance electric vehicles.

-- Please encourage and support community goal setting, energy data collection across sectors, and planning efforts to reduce emissions and save money in local communities.

-- Voluntary controls on oil and gas development are inappropriate. The industry has had decades to voluntarily curb greenhouse gas emissions and has failed to do so. Methane emissions from oil and gas development are easily controlled and should be required. The time has past for voluntary commitments from this greenhouse gas producing sector.

-- Carbon capture and sequestration is not an appropriate climate solution for coal-fired electricity. This unproven technology only makes dirty, expensive coal plants even more expensive and risky. The final recommendations should focus on reducing reliance on coal-fired electricity instead of relying on misguided, expensive, risky, and unproven technology.

Thank you,

--
Amy Hansen
[redacted]
Asbury, NJ
Rockport

#6-26

From: [redacted]
To: Climate Council
Subject: [EXTERNAL] Comments on draft Montana Climate Solutions Plan
Date: Wednesday, March 18, 2020 5:16:55 PM

Council Members,

Thank you for your efforts in producing the draft Montana Climate Solutions plan. In addition to the specific comments below, please make it a priority that implementation begin immediately for those measures which can begin right away and that will help reduce greenhouse gas emissions.

-- Please support efforts to expand Montana's ability to understand climate risks and prepare for change. In particular, recommendations 1A through 1H should be funded and acted upon.

-- Montana needs more accessible climate science. Please support a larger Montana Climate Office with more staff, stronger Montana University System climate coordination, research and funding, and increased support from the state to communities so they can develop greenhouse gas reduction and climate adaptation strategies.

-- Recommendations 2A through 2E and 2G through 2K are essential for Montana to reduce greenhouse gas emissions and avoid locking into new fossil fuel infrastructure. Montana is deficient in programs and funding to support energy efficiency and conservation and the key strategies identified, if enacted swiftly and with financial support, are essential. They will save Montanans money while improving public health.

-- A statewide energy efficiency standard would save all Montanans money.

-- Raising the size cap on distributed generation solar systems (aka rooftop solar) would benefit schools, libraries, and other public buildings in their community - saving taxpayer dollars and creating educational opportunities for our youth.

-- Support adoption of low emission vehicle standards and actions that will incentivize/promote/enhance electric vehicles.

-- Please encourage and support community goal setting, energy data collection across sectors, and planning efforts to reduce emissions and save money in local communities.

-- Voluntary controls on oil and gas development are inappropriate. The industry has had decades to voluntarily curb greenhouse gas emissions and has failed to do so. Methane emissions from oil and gas development are easily controlled and should be required. The time has past for voluntary commitments from this greenhouse gas producing sector.

-- Carbon capture and sequestration is not an appropriate climate solution for coal-fired electricity. This unproven technology only makes dirty, expensive coal plants even more expensive and risky. The final recommendations should focus on reducing reliance on coal-fired electricity instead of relying on misguided, expensive, risky, and unproven technology.

Thank you,

--
Raso Hultgren
[redacted]
Missoula, Montana

#6-27

From: [redacted]
To: Climate Council
Subject: [EXTERNAL] Comments on draft Montana Climate Solutions Plan
Date: Wednesday, March 18, 2020 5:13:39 PM

Council Members,

Thank you for your efforts in producing the draft Montana Climate Solutions plan. In addition to the specific comments below, please make it a priority that implementation begin immediately for those measures which can begin right away and that will help reduce greenhouse gas emissions.

-- Please support efforts to expand Montana's ability to understand climate risks and prepare for change. In particular, recommendations 1A through 1H should be funded and acted upon.

-- Montana needs more accessible climate science. Please support a larger Montana Climate Office with more staff, stronger Montana University System climate coordination, research and funding, and increased support from the state to communities so they can develop greenhouse gas reduction and climate adaptation strategies.

-- Recommendations 2A through 2E and 2G through 2K are essential for Montana to reduce greenhouse gas emissions and avoid locking into new fossil fuel infrastructure. Montana is deficient in programs and funding to support energy efficiency and conservation and the key strategies identified, if enacted swiftly and with financial support, are essential. They will save Montanans money while improving public health.

-- A statewide energy efficiency standard would save all Montanans money.

-- Raising the size cap on distributed generation solar systems (aka rooftop solar) would benefit schools, libraries, and other public buildings in their community - saving taxpayer dollars and creating educational opportunities for our youth.

-- Support adoption of low emission vehicle standards and actions that will incentivize/promote/enhance electric vehicles.

-- Please encourage and support community goal setting, energy data collection across sectors, and planning efforts to reduce emissions and save money in local communities.

-- Voluntary controls on oil and gas development are inappropriate. The industry has had decades to voluntarily curb greenhouse gas emissions and has failed to do so. Methane emissions from oil and gas development are easily controlled and should be required. The time has past for voluntary commitments from this greenhouse gas producing sector.

-- Carbon capture and sequestration is not an appropriate climate solution for coal-fired electricity. This unproven technology only makes dirty, expensive coal plants even more expensive and risky. The final recommendations should focus on reducing reliance on coal-fired electricity instead of relying on misguided, expensive, risky, and unproven technology.

Thank you,

--
Nancy Jochem
[redacted]
Bozeman, MT

#6-28

From: [redacted]
To: Climate Council
Subject: [EXTERNAL] Comments on draft Montana Climate Solutions Plan
Date: Wednesday, March 18, 2020 5:16:16 PM

Council Members,

Thank you for your efforts in producing the draft Montana Climate Solutions plan. In addition to the specific comments below, please make it a priority that implementation begin immediately for those measures which can begin right away and that will help reduce greenhouse gas emissions.

-- Please support efforts to expand Montana's ability to understand climate risks and prepare for change. In particular, recommendations 1A through 1H should be funded and acted upon.

-- Montana needs more accessible climate science. Please support a larger Montana Climate Office with more staff, stronger Montana University System climate coordination, research and funding, and increased support from the state to communities so they can develop greenhouse gas reduction and climate adaptation strategies.

-- Recommendations 2A through 2E and 2G through 2K are essential for Montana to reduce greenhouse gas emissions and avoid locking into new fossil fuel infrastructure. Montana is deficient in programs and funding to support energy efficiency and conservation and the key strategies identified, if enacted swiftly and with financial support, are essential. They will save Montanans money while improving public health.

-- A statewide energy efficiency standard would save all Montanans money.

-- Raising the size cap on distributed generation solar systems (aka rooftop solar) would benefit schools, libraries, and other public buildings in their community - saving taxpayer dollars and creating educational opportunities for our youth.

-- Support adoption of low emission vehicle standards and actions that will incentivize/promote/enhance electric vehicles.

-- Please encourage and support community goal setting, energy data collection across sectors, and planning efforts to reduce emissions and save money in local communities.

-- Voluntary controls on oil and gas development are inappropriate. The industry has had decades to voluntarily curb greenhouse gas emissions and has failed to do so. Methane emissions from oil and gas development are easily controlled and should be required. The time has past for voluntary commitments from this greenhouse gas producing sector.

-- Carbon capture and sequestration is not an appropriate climate solution for coal-fired electricity. This unproven technology only makes dirty, expensive coal plants even more expensive and risky. The final recommendations should focus on reducing reliance on coal-fired electricity instead of relying on misguided, expensive, risky, and unproven technology.

Thank you,

--
Matthew Marcinek
[redacted]
Bozeman, MT

#6-29

From: [redacted]
To: Climate Council
Subject: [EXTERNAL] Comments on draft Montana Climate Solutions Plan
Date: Wednesday, March 18, 2020 5:12:56 PM

Council Members,

I am writing regarding the draft Montana Climate Solutions plan. In addition to the comments below, make it a priority that implementation begin immediately for those measures which can begin right away and that will help reduce greenhouse gas emissions.

-- Support efforts to expand Montana's ability to understand climate risks and prepare for change. In particular, recommendations 1A through 1H should be funded and acted upon.

-- Montana needs more accessible climate science. Support a larger Montana Climate Office with more staff, stronger Montana University System climate coordination, research and funding, and increased support from the state to communities so they can develop greenhouse gas reduction and climate adaptation strategies.

-- Recommendations 2A through 2E and 2G through 2K are essential for Montana to reduce greenhouse gas emissions and avoid locking into new fossil fuel infrastructure. Montana is deficient in programs and funding to support energy efficiency and conservation and the key strategies identified, if enacted quickly and with financial support, are essential. They will save Montanans money while improving public health.

-- A statewide energy efficiency standard would save all Montanans money.

-- Raising the size cap on distributed generation solar systems (aka rooftop solar) would benefit schools, libraries, and other public buildings in their community - saving taxpayer dollars and creating educational opportunities for our youth.

-- Support adoption of low emission vehicle standards and actions that will incentivize/promote/enhance electric vehicles.

-- Encourage and support community goal setting, energy data collection across sectors, and planning efforts to reduce emissions and save money in local communities.

-- Voluntary controls on oil and gas development are inappropriate. The industry has had decades to voluntarily curb greenhouse gas emissions and has failed to do so. Methane emissions from oil and gas development are easily controlled and must be required. It is past time for voluntary commitments from this greenhouse gas producing sector.

-- Carbon capture and sequestration is not an appropriate climate solution for coal-fired electricity. This unproven technology makes dirty, expensive coal plants more expensive and risky. The final recommendations must focus on reducing reliance on coal-fired electricity instead of relying on misguided, expensive, risky, and unproven technology.

--
jennifer nitz
[redacted]
Missoula, Montana
Missoula

#6-30

From: [redacted]
To: Climate Council
Subject: [EXTERNAL] Comments on draft Montana Climate Solutions Plan
Date: Wednesday, March 18, 2020 5:15:44 PM

Council Members,

Thank you for your efforts in producing the draft Montana Climate Solutions plan. In addition to the specific comments below, please make it a priority that implementation begin immediately for those measures which can begin right away and that will help reduce greenhouse gas emissions.

-- Please support efforts to expand Montana's ability to understand climate risks and prepare for change. In particular, recommendations 1A through 1H should be funded and acted upon.

-- Montana needs more accessible climate science. Please support a larger Montana Climate Office with more staff, stronger Montana University System climate coordination, research and funding, and increased support from the state to communities so they can develop greenhouse gas reduction and climate adaptation strategies.

-- Recommendations 2A through 2E and 2G through 2K are essential for Montana to reduce greenhouse gas emissions and avoid locking into new fossil fuel infrastructure. Montana is deficient in programs and funding to support energy efficiency and conservation and the key strategies identified, if enacted swiftly and with financial support, are essential. They will save Montanans money while improving public health.

-- A statewide energy efficiency standard would save all Montanans money.

-- Raising the size cap on distributed generation solar systems (aka rooftop solar) would benefit schools, libraries, and other public buildings in their community - saving taxpayer dollars and creating educational opportunities for our youth.

-- Support adoption of low emission vehicle standards and actions that will incentivize/promote/enhance electric vehicles.

-- Please encourage and support community goal setting, energy data collection across sectors, and planning efforts to reduce emissions and save money in local communities.

-- Voluntary controls on oil and gas development are inappropriate. The industry has had decades to voluntarily curb greenhouse gas emissions and has failed to do so. Methane emissions from oil and gas development are easily controlled and should be required. The time has past for voluntary commitments from this greenhouse gas producing sector.

-- Carbon capture and sequestration is not an appropriate climate solution for coal-fired electricity. This unproven technology only makes dirty, expensive coal plants even more expensive and risky. The final recommendations should focus on reducing reliance on coal-fired electricity instead of relying on misguided, expensive, risky, and unproven technology.

Thank you,

--
Kurt Olofson
[redacted]
Helena, Montana

#6-31

From: [redacted]
To: Climate Council
Subject: [EXTERNAL] Comments on draft Montana Climate Solutions Plan
Date: Wednesday, March 18, 2020 5:13:43 PM

Council Members,

Thank you for your efforts in producing the draft Montana Climate Solutions plan. In addition to the specific comments below, please make it a priority that implementation begin immediately for those measures which can begin right away and that will help reduce greenhouse gas emissions.

-- Please support efforts to expand Montana's ability to understand climate risks and prepare for change. In particular, recommendations 1A through 1H should be funded and acted upon.

-- Montana needs more accessible climate science. Please support a larger Montana Climate Office with more staff, stronger Montana University System climate coordination, research and funding, and increased support from the state to communities so they can develop greenhouse gas reduction and climate adaptation strategies.

-- Recommendations 2A through 2E and 2G through 2K are essential for Montana to reduce greenhouse gas emissions and avoid locking into new fossil fuel infrastructure. Montana is deficient in programs and funding to support energy efficiency and conservation and the key strategies identified, if enacted swiftly and with financial support, are essential. They will save Montanans money while improving public health.

-- A statewide energy efficiency standard would save all Montanans money.

-- Raising the size cap on distributed generation solar systems (aka rooftop solar) would benefit schools, libraries, and other public buildings in their community - saving taxpayer dollars and creating educational opportunities for our youth.

-- Support adoption of low emission vehicle standards and actions that will incentivize/promote/enhance electric vehicles.

-- Please encourage and support community goal setting, energy data collection across sectors, and planning efforts to reduce emissions and save money in local communities.

-- Voluntary controls on oil and gas development are inappropriate. The industry has had decades to voluntarily curb greenhouse gas emissions and has failed to do so. Methane emissions from oil and gas development are easily controlled and should be required. The time has past for voluntary commitments from this greenhouse gas producing sector.

-- Carbon capture and sequestration is not an appropriate climate solution for coal-fired electricity. This unproven technology only makes dirty, expensive coal plants even more expensive and risky. The final recommendations should focus on reducing reliance on coal-fired electricity instead of relying on misguided, expensive, risky, and unproven technology.

Thank you,

--
David Patenaude
[redacted]
Bozeman, MT

#6-32

From: [redacted]
To: Climate Council
Subject: [EXTERNAL] Comments on draft Montana Climate Solutions Plan
Date: Wednesday, March 18, 2020 5:16:01 PM

Council Members,

Thank you for your efforts in producing the draft Montana Climate Solutions plan. In addition to the specific comments below, please make it a priority that implementation begin immediately for those measures which can begin right away and that will help reduce greenhouse gas emissions.

-- Please support efforts to expand Montana's ability to understand climate risks and prepare for change. In particular, recommendations 1A through 1H should be funded and acted upon.

-- Montana needs more accessible climate science. Please support a larger Montana Climate Office with more staff, stronger Montana University System climate coordination, research and funding, and increased support from the state to communities so they can develop greenhouse gas reduction and climate adaptation strategies.

-- Recommendations 2A through 2E and 2G through 2K are essential for Montana to reduce greenhouse gas emissions and avoid locking into new fossil fuel infrastructure. Montana is deficient in programs and funding to support energy efficiency and conservation and the key strategies identified, if enacted swiftly and with financial support, are essential. They will save Montanans money while improving public health.

-- A statewide energy efficiency standard would save all Montanans money.

-- Raising the size cap on distributed generation solar systems (aka rooftop solar) would benefit schools, libraries, and other public buildings in their community - saving taxpayer dollars and creating educational opportunities for our youth.

-- Support adoption of low emission vehicle standards and actions that will incentivize/promote/enhance electric vehicles.

-- Please encourage and support community goal setting, energy data collection across sectors, and planning efforts to reduce emissions and save money in local communities.

-- Voluntary controls on oil and gas development are inappropriate. The industry has had decades to voluntarily curb greenhouse gas emissions and has failed to do so. Methane emissions from oil and gas development are easily controlled and should be required. The time has past for voluntary commitments from this greenhouse gas producing sector.

-- Carbon capture and sequestration is not an appropriate climate solution for coal-fired electricity. This unproven technology only makes dirty, expensive coal plants even more expensive and risky. The final recommendations should focus on reducing reliance on coal-fired electricity instead of relying on misguided, expensive, risky, and unproven technology.

Thank you,

--
Gail and John Richardson
[redacted]
Bozeman, MT

#6-33

From: [redacted]
To: Climate Council
Subject: [EXTERNAL] Comments on draft Montana Climate Solutions Plan
Date: Wednesday, March 18, 2020 5:17:30 PM

Council Members,

Thank you for your efforts in producing the draft Montana Climate Solutions plan. In addition to the specific comments below, please make it a priority that implementation begin immediately for those measures which can begin right away and that will help reduce greenhouse gas emissions.

-- Please support efforts to expand Montana's ability to understand climate risks and prepare for change. In particular, recommendations 1A through 1H should be funded and acted upon.

-- Montana needs more accessible climate science. Please support a larger Montana Climate Office with more staff, stronger Montana University System climate coordination, research and funding, and increased support from the state to communities so they can develop greenhouse gas reduction and climate adaptation strategies.

-- Recommendations 2A through 2E and 2G through 2K are essential for Montana to reduce greenhouse gas emissions and avoid locking into new fossil fuel infrastructure. Montana is deficient in programs and funding to support energy efficiency and conservation and the key strategies identified, if enacted swiftly and with financial support, are essential. They will save Montanans money while improving public health.

-- A statewide energy efficiency standard would save all Montanans money.

-- Raising the size cap on distributed generation solar systems (aka rooftop solar) would benefit schools, libraries, and other public buildings in their community - saving taxpayer dollars and creating educational opportunities for our youth.

-- Support adoption of low emission vehicle standards and actions that will incentivize/promote/enhance electric vehicles.

-- Please encourage and support community goal setting, energy data collection across sectors, and planning efforts to reduce emissions and save money in local communities.

-- Voluntary controls on oil and gas development are inappropriate. The industry has had decades to voluntarily curb greenhouse gas emissions and has failed to do so. Methane emissions from oil and gas development are easily controlled and should be required. The time has past for voluntary commitments from this greenhouse gas producing sector.

-- Carbon capture and sequestration is not an appropriate climate solution for coal-fired electricity. This unproven technology only makes dirty, expensive coal plants even more expensive and risky. The final recommendations should focus on reducing reliance on coal-fired electricity instead of relying on misguided, expensive, risky, and unproven technology.

Thank you,

--
Barbara Rosenkotter
[redacted]
Deer Harbor, WA

#6-34

From: [redacted]
To: Climate Council
Subject: [EXTERNAL] Comments on draft Montana Climate Solutions Plan
Date: Wednesday, March 18, 2020 5:16:28 PM

Council Members,

Thank you for your efforts in producing the draft Montana Climate Solutions plan. In addition to the specific comments below, please make it a priority that implementation begin immediately for those measures which can begin right away and that will help reduce greenhouse gas emissions.

-- Please support efforts to expand Montana's ability to understand climate risks and prepare for change. In particular, recommendations 1A through 1H should be funded and acted upon.

-- Montana needs more accessible climate science. Please support a larger Montana Climate Office with more staff, stronger Montana University System climate coordination, research and funding, and increased support from the state to communities so they can develop greenhouse gas reduction and climate adaptation strategies.

-- Recommendations 2A through 2E and 2G through 2K are essential for Montana to reduce greenhouse gas emissions and avoid locking into new fossil fuel infrastructure. Montana is deficient in programs and funding to support energy efficiency and conservation and the key strategies identified, if enacted swiftly and with financial support, are essential. They will save Montanans money while improving public health.

-- A statewide energy efficiency standard would save all Montanans money.

-- Raising the size cap on distributed generation solar systems (aka rooftop solar) would benefit schools, libraries, and other public buildings in their community - saving taxpayer dollars and creating educational opportunities for our youth.

-- Support adoption of low emission vehicle standards and actions that will incentivize/promote/enhance electric vehicles.

-- Please encourage and support community goal setting, energy data collection across sectors, and planning efforts to reduce emissions and save money in local communities.

-- Voluntary controls on oil and gas development are inappropriate. The industry has had decades to voluntarily curb greenhouse gas emissions and has failed to do so. Methane emissions from oil and gas development are easily controlled and should be required. The time has past for voluntary commitments from this greenhouse gas producing sector.

-- Carbon capture and sequestration is not an appropriate climate solution for coal-fired electricity. This unproven technology only makes dirty, expensive coal plants even more expensive and risky. The final recommendations should focus on reducing reliance on coal-fired electricity instead of relying on misguided, expensive, risky, and unproven technology.

Thank you,

--
Jackson Scholl
[redacted]
Missoula, Mt

#6-35

From: [redacted]
To: Climate Council
Subject: [EXTERNAL] Comments on draft Montana Climate Solutions Plan
Date: Wednesday, March 18, 2020 5:16:13 PM

Council Members,

Thank you for your efforts in producing the draft Montana Climate Solutions plan. In addition to the specific comments below, please make it a priority that implementation begin immediately for those measures which can begin right away and that will help reduce greenhouse gas emissions.

-- Please support efforts to expand Montana's ability to understand climate risks and prepare for change. In particular, recommendations 1A through 1H should be funded and acted upon.

-- Montana needs more accessible climate science. Please support a larger Montana Climate Office with more staff, stronger Montana University System climate coordination, research and funding, and increased support from the state to communities so they can develop greenhouse gas reduction and climate adaptation strategies.

-- Recommendations 2A through 2E and 2G through 2K are essential for Montana to reduce greenhouse gas emissions and avoid locking into new fossil fuel infrastructure. Montana is deficient in programs and funding to support energy efficiency and conservation and the key strategies identified, if enacted swiftly and with financial support, are essential. They will save Montanans money while improving public health.

-- A statewide energy efficiency standard would save all Montanans money.

-- Raising the size cap on distributed generation solar systems (aka rooftop solar) would benefit schools, libraries, and other public buildings in their community - saving taxpayer dollars and creating educational opportunities for our youth.

-- Support adoption of low emission vehicle standards and actions that will incentivize/promote/enhance electric vehicles.

-- Please encourage and support community goal setting, energy data collection across sectors, and planning efforts to reduce emissions and save money in local communities.

-- Voluntary controls on oil and gas development are inappropriate. The industry has had decades to voluntarily curb greenhouse gas emissions and has failed to do so. Methane emissions from oil and gas development are easily controlled and should be required. The time has past for voluntary commitments from this greenhouse gas producing sector.

-- Carbon capture and sequestration is not an appropriate climate solution for coal-fired electricity. This unproven technology only makes dirty, expensive coal plants even more expensive and risky. The final recommendations should focus on reducing reliance on coal-fired electricity instead of relying on misguided, expensive, risky, and unproven technology.

Thank you,

--
Michael Scott
[redacted]
Grand Haven , Mi

#6-36

From: [redacted]
To: Climate Council
Subject: [EXTERNAL] Comments on draft Montana Climate Solutions Plan
Date: Wednesday, March 18, 2020 5:17:06 PM

Council Members,

Thank you for your efforts in producing the draft Montana Climate Solutions plan. In addition to the specific comments below, please make it a priority that implementation begin immediately for those measures which can begin right away and that will help reduce greenhouse gas emissions.

-- Please support efforts to expand Montana's ability to understand climate risks and prepare for change. In particular, recommendations 1A through 1H should be funded and acted upon.

-- Montana needs more accessible climate science. Please support a larger Montana Climate Office with more staff, stronger Montana University System climate coordination, research and funding, and increased support from the state to communities so they can develop greenhouse gas reduction and climate adaptation strategies.

-- Recommendations 2A through 2E and 2G through 2K are essential for Montana to reduce greenhouse gas emissions and avoid locking into new fossil fuel infrastructure. Montana is deficient in programs and funding to support energy efficiency and conservation and the key strategies identified, if enacted swiftly and with financial support, are essential. They will save Montanans money while improving public health.

-- A statewide energy efficiency standard would save all Montanans money.

-- Raising the size cap on distributed generation solar systems (aka rooftop solar) would benefit schools, libraries, and other public buildings in their community - saving taxpayer dollars and creating educational opportunities for our youth.

-- Support adoption of low emission vehicle standards and actions that will incentivize/promote/enhance electric vehicles.

-- Please encourage and support community goal setting, energy data collection across sectors, and planning efforts to reduce emissions and save money in local communities.

-- Voluntary controls on oil and gas development are inappropriate. The industry has had decades to voluntarily curb greenhouse gas emissions and has failed to do so. Methane emissions from oil and gas development are easily controlled and should be required. The time has past for voluntary commitments from this greenhouse gas producing sector.

-- Carbon capture and sequestration is not an appropriate climate solution for coal-fired electricity. This unproven technology only makes dirty, expensive coal plants even more expensive and risky. The final recommendations should focus on reducing reliance on coal-fired electricity instead of relying on misguided, expensive, risky, and unproven technology.

Thank you,

--
Amy Seaman
[redacted]
Helena , MT

#6-37

From: [redacted]
To: Climate Council
Subject: [EXTERNAL] Comments on draft Montana Climate Solutions Plan
Date: Wednesday, March 18, 2020 5:13:03 PM

Council Members,

Thank you for your efforts in producing the draft Montana Climate Solutions plan. In addition to the specific comments below, please make it a priority that implementation begin immediately for those measures which can begin right away and that will help reduce greenhouse gas emissions.

-- Please support efforts to expand Montana's ability to understand climate risks and prepare for change. In particular, recommendations 1A through 1H should be funded and acted upon.

-- Montana needs more accessible climate science. Please support a larger Montana Climate Office with more staff, stronger Montana University System climate coordination, research and funding, and increased support from the state to communities so they can develop greenhouse gas reduction and climate adaptation strategies.

-- Recommendations 2A through 2E and 2G through 2K are essential for Montana to reduce greenhouse gas emissions and avoid locking into new fossil fuel infrastructure. Montana is deficient in programs and funding to support energy efficiency and conservation and the key strategies identified, if enacted swiftly and with financial support, are essential. They will save Montanans money while improving public health.

-- A statewide energy efficiency standard would save all Montanans money.

-- Raising the size cap on distributed generation solar systems (aka rooftop solar) would benefit schools, libraries, and other public buildings in their community - saving taxpayer dollars and creating educational opportunities for our youth.

-- Support adoption of low emission vehicle standards and actions that will incentivize/promote/enhance electric vehicles.

-- Please encourage and support community goal setting, energy data collection across sectors, and planning efforts to reduce emissions and save money in local communities.

-- Voluntary controls on oil and gas development are inappropriate. The industry has had decades to voluntarily curb greenhouse gas emissions and has failed to do so. Methane emissions from oil and gas development are easily controlled and should be required. The time has past for voluntary commitments from this greenhouse gas producing sector.

-- Carbon capture and sequestration is not an appropriate climate solution for coal-fired electricity. This unproven technology only makes dirty, expensive coal plants even more expensive and risky. The final recommendations should focus on reducing reliance on coal-fired electricity instead of relying on misguided, expensive, risky, and unproven technology.

Thank you,

--
Linda Semones
[redacted]
Bozeman, MT

#6-38

From: [redacted]
To: Climate Council
Subject: [EXTERNAL] Comments on draft Montana Climate Solutions Plan
Date: Wednesday, March 18, 2020 5:13:06 PM

Council Members,

Thank you for your efforts in producing the draft Montana Climate Solutions plan. In addition to the specific comments below, please make it a priority that implementation begin immediately for those measures which can begin right away and that will help reduce greenhouse gas emissions.

-- Please support efforts to expand Montana's ability to understand climate risks and prepare for change. In particular, recommendations 1A through 1H should be funded and acted upon.

-- Montana needs more accessible climate science. Please support a larger Montana Climate Office with more staff, stronger Montana University System climate coordination, research and funding, and increased support from the state to communities so they can develop greenhouse gas reduction and climate adaptation strategies.

-- Recommendations 2A through 2E and 2G through 2K are essential for Montana to reduce greenhouse gas emissions and avoid locking into new fossil fuel infrastructure. Montana is deficient in programs and funding to support energy efficiency and conservation and the key strategies identified, if enacted swiftly and with financial support, are essential. They will save Montanans money while improving public health.

-- A statewide energy efficiency standard would save all Montanans money.

-- Raising the size cap on distributed generation solar systems (aka rooftop solar) would benefit schools, libraries, and other public buildings in their community - saving taxpayer dollars and creating educational opportunities for our youth.

-- Support adoption of low emission vehicle standards and actions that will incentivize/promote/enhance electric vehicles.

-- Please encourage and support community goal setting, energy data collection across sectors, and planning efforts to reduce emissions and save money in local communities.

-- Voluntary controls on oil and gas development are inappropriate. The industry has had decades to voluntarily curb greenhouse gas emissions and has failed to do so. Methane emissions from oil and gas development are easily controlled and should be required. The time has past for voluntary commitments from this greenhouse gas producing sector.

-- Carbon capture and sequestration is not an appropriate climate solution for coal-fired electricity. This unproven technology only makes dirty, expensive coal plants even more expensive and risky. The final recommendations should focus on reducing reliance on coal-fired electricity instead of relying on misguided, expensive, risky, and unproven technology.

Thank you,

--
Wayne Tomicich
[redacted]
Red Lodge, MT

#6-39

From: [redacted]
To: Climate Council
Subject: [EXTERNAL] Comments on Preliminary recommendations
Date: Thursday, March 19, 2020 4:01:26 PM
Attachments: Preliminary Plan Comments DCA.docx
2020-02-11_ClimateCouncil_PreliminaryRecAtkins Comments.docx

I have attached two documents, a cover letter and then the preliminary plan with my comments embedded through tracking changes.

There are many good suggestions in the preliminary plan but the most significant policy lever is left out. A Carbon Fee and Dividend would provide the needed carrots and sticks to change behavior from the individual, business and government (local, state and federal). It is fair as every family would get a rebate, would stimulate the economy, it is revenue neutral and most importantly it is effective within the timeframes the IPCC has laid out to successfully avoid untenable economic, social and environmental damage to our citizens in Montana.

--
Dave Atkins
Forester/Forest Ecologist

[redacted]

"If you don't grow it, you mine it"

#6-39

3/19/2020

Climate Solutions Council

Comments on Preliminary Plan

Dear Members,

Thank you for dedicating time away from your normal jobs to serve the people of Montana on this extremely important issue affecting every Montanan whether they realize it or not. We have a decade to bring about substantial changes to our use of fossil fuels and set our economy on a very different path. And then two more decades to fossil carbon neutrality and then drawing down the CO2 in the atmosphere by 2050. I have a deep background in Forest Ecology, Forest Management, Carbon Cycling and the role of forests and their products (including energy production) in climate change.

The current covid 19 pandemic is an important lesson for approaching climate change. "Everything we do before a pandemic will seem alarmist, everything we do after will seem inadequate." Michael Leavitt 2007 HHS Secretary. We are learning the truth of this statement as we are all severely restricted in where we go and what we do in response to covid 19. The same can be applied to climate change. The difference between the two is covid 19 plays out in days and weeks whereas climate change has taken decades. We are running out of time to make the changes for climate change to avoid catastrophic economic, environmental and social effects. This council is tasked with mapping out the path forward. You have to think big and bold and recommend dramatic actions that fit the scale of the problem in front of us, just as we are attempting to do with covid 19 in real time.

Forests in Montana, the US and internationally and their management are extremely important to achieving these changes. Their role in outdoor recreation, watershed benefits, wildlife habitat, carbon capture and storage in trees and short and long-lived products is substantial. Our forests can either be a negative carbon source further aggravating climate change through mega-fires and insect and disease epidemics or they can be a sink helping solve the problem.

Many of our forests are also in need of management to help them adapt to the new climate we have already started to experience, from the megafires to bark beetle outbreaks. These management needs provide opportunities for innovation to capture and use the biogenic carbon that has been stored in the overstocked forests. Federal forests must be part of these actions. The harvest and use of wood products are enmeshed in all three committees and thus it is important to tie them all together as stated in Guiding Principle #5 for Effective Adaptation. Many of my comments relate to forests and their role but not exclusively.

The reports and recommendations do not address embodied energy and CO2 content, which is the energy/CO2 needed to make a product. Some materials are very high such as concrete, steel, aluminum, glass, etc. Wood has a very low content by comparison because the sun's energy drives the creation of it. And in Montana our sawmills on average use 86% renewable energy, so the fossil carbon content is very low by comparison. Embodied energy is extremely important because all the CO2 released for a building or bridge is released at the time of construction, whereas the CO2 released by operations (heating, cooling and lighting) accumulate over time. Both are important to address but given the time frame the IPCC provides to avoid the 1.5 degree increase

we need to make as much of the change as possible that is front end loaded. By addressing both the embodied energy and operational/maintenance energy the built environment can become a carbon sink rather than a source. Please make this an explicit part of the recommendations.

In the attached are my comments embedded in your preliminary recommendations. I only comment on items that I thought had been missed, needed further articulation or I disagreed with. The portions without comment I find acceptable or don't know enough about to comment thoughtfully. There is some redundancy where topics overlap between the three sections, which I have left on purpose. I think it is important the document make explicit the interconnected nature of many of the recommendations.

My final contextual comment is that there is a policy tool that provides the fundamental carrot and stick for the vast majority of my comments and many of the recommendations in the preliminary plan. A national carbon fee and dividend that places a relatively low price on fossil carbon initially but steadily rises over the next three decades is essential to sending a clear signal throughout the whole economic chain of products and services for which it is used. The Governor's E.O. calls for fossil carbon neutrality by 2050 throughout the whole economy, to achieve that requires a mechanism that will penetrate the whole economy, a carbon fee can do that. To achieve equity for the citizens of Montana and the whole country, I recommend all the money collected be returned to citizens on a per capita basis, less administration costs and funds to cover displaced workers. The policy should include a border trade adjustment to protect American businesses and a rebate for carbon capture and storage through both technical and biological means. The dividend provides the funds to families to adapt their lifestyle to a low fossil carbon economy, by buying a low carbon vehicle or installing solar PV or heat collectors, insulating their house and replacing windows, etc. The dividend is flexible for families to choose the system that best fits their situation. A strong endorsement of a federal fossil carbon fee and dividend by this diverse group is needed to motivate our federal representatives in congress to pass legislation.

A key consideration is that society is already paying for the changing climate effects, by landowners, businesses, families, local, state and federal government agencies suffering the costs of drought, wildfire, detrimental health effects of smoke, cancelled recreation visits, etc; however the costs are external to the price of fossil carbon and thus there is no price signal sent to producers and consumers to change their behavior. Let's establish a market signal that will change behavior of every entity just described.

Here are a few examples of how behavior would change:

- How different would utilities whether Coops or NWE's 20 year plans be different if there was a steadily increasing price on fossil carbon for the next 30 years? They and their energy providers would have a very different set of costs to consider and would change their approach, including carbon capture and storage.
- Local and state government investments in buildings would be changed. The city of Missoula is finishing a new 3 storey library that fills and entire city block. It was built with concrete and steel which both have very large embodied energy/fossil carbon content. They did not use mass timber because apparently the cost was higher for wood. If a price on fossil carbon existed at the time of planning and design the structure it would likely have had a different outcome, as would most private construction projects.

- Individuals would make different choices for their transportation purchases if they knew the price of gasoline/diesel was going to go up steadily for the next 30 years.

Attached is a word version of the preliminary recommendations and questions with my comments, questions and suggestions embedded using tracking changes.

Submitted with respect and admiration for this most important task you are helping the state address. Please contact me if you have any questions related to my comments.

Sincerely,

David C. Atkins

[redacted]

#6-39

MONTANA CLIMATE SOLUTIONS PLAN

Preliminary Recommendations and Key Questions

For Partner and Public Comment

January 31, 2020

Modified February 12, 2020

Contents

Introduction

On July 1, 2019, Governor Bullock issued Executive Order 8-2019, creating the Montana Climate Solutions Council and joining the State of Montana to the U.S. Climate Alliance. The Council is tasked with providing to the Governor a Climate Solutions Plan, by June 1, 2020, that provides recommendations and strategies aimed at preparing Montanans for climate impacts; reducing greenhouse gas emissions—including achieving an interim goal of net greenhouse gas neutrality for average annual electric loads in the state by no later than 2035 and a goal of net greenhouse gas neutrality economy-wide at a date to be determined by the Council; advancing the research, development and commercialization of new technologies necessary to meet these goals; and addressing the needs of communities and workers in transitions through economic and workforce development efforts.

Montana's climate is already changing. Our temperatures are 3 degrees warmer on average than they were just a few decades ago; early spring runoff is impacting our water availability and causing flooding; our fire seasons are by some estimates 78 days longer than they were 30 years ago and by most accounts more severe. In 2017, the state experienced our largest and most expensive fire season on record since the big burn of 1910. We had double the incidence of respiratory related ER visits in affected counties; we endured periodic waves of evacuations; and tragically, we lost the lives of two wildland firefighters. The state lost up to 800,000 visitors due to 2017 fires and smoke, resulting in an estimated loss of $240.5 million in visitor spending. According to the Montana Climate Assessment (MCA), the State could experience an additional 3-7 degrees increase in average temperatures by mid-century, including an increase in incidences of extreme heat that could dramatically increase many of these impacts moving forward.

Within our state borders, we have also begun to experience transitions in our economy and our energy sector that reflect the changes that are happening across our nation and around the world. How the state elects to respond to the shifting demands and needs of the global economy can help assure our sustained economic growth and position us to continue to provide the food, energy, products,

technology, tourism opportunities and other goods and services to the nation and the world that drive our economy.

Planning for climate change can help the state prepare for risks amid these uncertainties. Not only does the state face a series of physical risks tied to a changing climate, the state and our businesses also face a series of fiscal, economic, financial and policy risks tied to the changes happening around us. Planning for climate change not only helps us manage the costs tied to these risks through proactive efforts to manage risk and uncertainty, it also offers opportunities for the state to capture and localize the market for innovation happening in response to climate challenges, offering a chance for the state to both safeguard our traditional strengths, and diversify and grow new opportunities for our future. While there are many benefits to climate planning and action, many members of the Council stress that great care must be taken to evaluate individual policies to determine the implications for issues like costs, equity across communities, and reliability of our energy system.

The Climate Solutions Council invites the public and partners to provide comment and feedback on this preliminary report. The preliminary recommendations, dissenting views and key questions reflect the early thinking of Council members and are provided in this draft to encourage upfront engagement as the Council deliberates toward its final product in June. Comments may be submitted to ClimateCouncil@mt.gov through March 31, 2020. Additional information regarding the Council, including meeting notes, composition, the Governor's Executive Order, the Council's Charter and other background is available at: https://deq.mt.gov/Climate.

Over the coming months, the Council looks forward to working with partners to refine these recommendations and to build the policies, programs and partnerships that will be required to ensure effective implementation. Responding to the challenges and opportunities associated with climate change in Montana will ultimately require a durable and sustained commitment on the part of citizens, businesses, neighbors, partners and our elected officials.

1. Preparing Montanans For Climate Impacts

Climate change-driven severe weather events like wildfires, drought, and flooding, continue to threaten people, communities and businesses across Montana. The State must prioritize efforts that will prepare our communities, infrastructure and economies for anticipated climate impacts. This includes ensuring that our natural resources - our farms, forests, rangelands, wildlife and water supplies - continue to sustain our livelihoods and quality of life. Building resilience will require addressing current climate variability and recent extreme events as well as preparing for future change and emergent threats. Given recent climate projections, there is an urgency to strengthen efforts across Montana.

The Climate Solutions Council established the Climate Adaptation, Information and Decision Support Committee to develop strategies to prepare the state for climate impacts. Adaptation knits together a range of activities from translating science into usable information to building the partnerships required to implement strategies that reduce risk. The practice of adaptation commonly includes five general stages: 1) awareness, 2) assessment, 3) planning, 4) implementation, and 5) monitoring.

A foundation of the best available science and locally relevant knowledge, experience, and information is critical to inform decision-making. However, sound science and information alone are insufficient to effectively manage climate related risks—efforts to translate that science into accessible information and to build capacity, outreach, and delivery mechanisms in response to the needs of government agencies, tribal nations, land managers, business owners, non-profits, and individuals is often necessary. Planning exercises can assist decision makers in assessing vulnerabilities and identifying appropriate strategies to minimize or eliminate risks. In the end, effective adaptation is an iterative process that requires taking action to reduce risks as well as a commitment to monitoring results and learning from successes and failures, and a willingness to try a different approach if necessary.

Montanans have diverse experiences planning for climate impacts, including efforts at municipal, county, watershed and Tribal Nation scales. Committee members discussed their past experiences involving Climate Smart Missoula, the Blackfeet Nation, Montana Disaster and Emergency Services, the Montana Climate Office's work with state agencies to develop early warning systems for drought and flooding, research and community engagement from the Montana University System, and the Department of Natural Resources and Conservation's work with federal partners in the Upper Missouri River Headwaters through the National Drought Resiliency Partnership. Council members also reflected on the findings and process used to develop the National Climate Assessment and the 2017 Montana Climate Assessment, including the state-based workshops, questionnaires and listening sessions used to guide the MCA's development. Based on these experiences and best practices, Council members identified the following guiding principles for effective adaptation.

GUIDING PRINCIPLES FOR EFFECTIVE CLIMATE ADAPTATION:

1. Montana agencies, communities and stakeholders should approach climate change and its impacts with an understanding of the state's geography, culture, history, economy, and resources.
2. Addressing the impacts of climate change requires robust, community-driven and bottom-up planning based on an understanding of climate projections and the specific vulnerabilities and risks that different sectors and communities will experience, including a focus on explicit goals and effective actions to build resilience.
3. A common framework using the best available science to develop adaptation plans can help highlight commonalities and differences across the approaches used by different jurisdictions and sectors, facilitating comparison and learning among users and the identification of best practices.
4. Recommendations should build on and be integrated into existing programs wherever possible.
5. Adaptation efforts should be coordinated with related efforts, especially strategies to reduce emissions and foster innovation to achieve multiple beneficial outcomes and synergies.
6. Communities cannot do adaptation planning individually and without support. The state needs to provide coordinated assistance to gather and share information, build and support networks and partnerships among communities, universities, non-profit and philanthropic organizations, provide sustained funding for planning, and leverage federal dollars and capacity.

Committee members developed, and the Council has advanced, the following early recommendations for public and partner input. Additional details may be found in the Committee's white papers found on the Department of Environmental Quality's Climate Solutions Council website.

Preliminary Council Recommendations:

1A: SUPPORT A COMMON FRAMEWORK FOR PREPARING FOR CLIMATE IMPACTS AT MULTIPLE SCALES BY GROWING AND SUSTAINING CLIMATE SCIENCE AND INFORMATION DEVELOPMENT

Key Strategies:

- Expand staffing and capacity of the Montana Climate Office to build upon current efforts to analyze historical and projected climate trends, and contribute to assessment andadaptation needs.
- Sustain periodic and ongoing climate assessments led by the Montana University System informed by the needs and expertise of state, local and tribal nation governments, businesses and stakeholders.
- Further develop and support the Montana Climate Data Layer Under the Montana Spatial Data Infrastructure and Montana Library based on the work of the Montana Climate Office and ongoing assessments.

1B: ESTABLISH A CLIMATE ADVISORY COUNCIL WITHIN THE MONTANA UNIVERSITY SYSTEM TO COORDINATE RESEARCH AND ASSESSMENT NEEDS AND FACILITATE EXTENSION OF CLIMATE INFORMATION AND SERVICES TO MONTANANS

Key Strategies:

- Prioritize and conduct research with University Social Scientists to better understandthe climate information needs of agricultural producers, forest land managers, tourism and recreation businesses, state, local and tribal governments and other stakeholders in Montana.
- Provide guidance and strategic direction to the Montana Climate Office on matters related to climate modeling priorities, information dissemination, decision support tools, and technology application for resource management.
- Develop and coordinate a network of Climate Extension Specialists with possible shared appointments between the Montana Climate Office, Tribal Colleges, MSU Agricultural Experiment Stations, MSU Extension, and the Montana Forest and Conservation Experiment Station in coordination with relevant state agencies. Use this network to support a communications strategy for target audiences and to support capacity needs for planning, grant applications and other user needs.

- Co-develop, field test, review and evaluate adaptation programs and strategies to identify best practices and lessons learned and ensure strategies deliver results and effective risk management for end users.
- Further develop drought and flood early warning systems to support community, tribal, state and federal responses.
- Develop county and municipal scale climate data toolkits to support efficient local adaptation planning.

1C: BUILD COMMUNITY RESILIENCE TO CLIMATE CHANGE THROUGH EFFECTIVE PLANNING

Key Strategies:

- Support the Climate Smart Montana network as a platform for communities to share ideas, processes, lessons learned, and resilience plans, so that no community needs to reinvent the wheel.
- Leverage the experiences of practitioners across the state to develop a roadmap and toolkit for planning such as building from ongoing efforts of the Department of Commerce's Montana Ready Communities Initiative.
- Develop strategies to integrate climate adaptation with disaster mitigation plans, wildfire plans, drought and flood plans, and others that can support resilience planning and facilitate implementation.
- Incorporate strategies from the forthcoming assessment of climate-related health risks and monitor climate-related illnesses to support local, regional and tribal health providers in response to extreme climate events such as extreme heat, vector-borne diseases, water-related illnesses, food safety and nutrition, wildfires, allergens and air quality, and mental health.
- Learn from and integrate traditional and indigenous knowledge into adaptation efforts.
- Build on and complement the climate adaptation work already happening on tribal lands throughout the state, while recognizing the leadership provided by Montana's sovereign tribal nations.
- Explore opportunities to integrate adaptation planning with planning to reduce greenhouse gas emissions, especially when solutions offer local resiliency to potential regional energy disruptions, and further local economic development goals.
- Be attentive to a range of co-benefits, as strategies are developed and implemented.

1D: ADAPT MONTANA'S BUILT ENVIRONMENT TO CLIMATE CHANGE

Key Strategies:

- Integrate adaptation actions with the Montana Disaster and Emergency Services Division's Hazard Mitigation Programs by working with communities to identify their highest priority risks

and vulnerabilities and implement hazard mitigation plans that incorporate climate impacts. Evaluate vulnerabilities for Montana's critical infrastructure (roads, bridges, power lines, telecommunications etc.) and develop coordinated federal, state, local and tribal nation resiliency strategies where needed.

- ~~Ensure local governments have access to updated information concerning current and future high-risk floodplain and wildfire prone wildland urban interface zones. Support state and local code updates to further reduce risks and impacts.~~MT DNRC will develop template codes and construction material and methods guidelines for cities and counties to consider adopting for development in the wildland urban interface and floodplain zones. Including sample landscaping guidelines and codes.
- Implement active management across ownership boundaries to reduce wildfire risks and sustain watershed functions as identified in Montana's updated Forest Action Plan. Implement an engagement process to educate and inform stakeholders on the Department of Environmental Quality's Smoke Management Program, highlighting the ability to use prescribed fire for forest fuel reduction on a year-round basis and the need for funding to improve smoke management forecasting.
- Prescribed burning across the landscape and in and around buildings is an essential tool for reducing wildfire risk. State law regarding liability needs to be changed in Montana to encourage landowners to do more of it. The governor will establish a task force from DRNC and the EQC to look at other states laws and develop proposed legislation to address this issue.
- Support local governments to integrate flood, disaster, and wildfire protection planning with community land use planning and decisions when requested by local officials.
- Ensure local infrastructure such as schools, hospitals, community centers, and shelters incorporate adaptation strategies to address the needs of the young, sick, aging and other vulnerable populations related to climate impacts such as smoke and air quality, extreme heat, flooding, winter emergencies and distributed energy needs.
- Expand the use of nature-based solutions that use natural systems, mimic natural processes, or work in tandem with traditional approaches to address natural hazards like flooding, erosion, drought, and heat islands. Incorporating these nature-based solutions in local planning, zoning, regulations, and built projects can help communities reduce their exposure to these impacts, resulting in reduced costs, economic enhancement, and safer, more resilient communities. Examples include urban park development, beaver mimicry, wetland and riparian restoration etc.
- Increase urban forest canopy in communities large and small to provide cooling shade, sustain public health, capture carbon and reduce energy consumption. The governors office will work with the EQC to evaluate the economic benefits of state investments to achieve this and draft legislation.

1E: PROTECT OUTDOOR RECREATION AND TOURISM RESOURCES TO MAINTAIN A DIVERSE AND HEALTHY ECONOMY, POSITIVE MENTAL AND PHYSICAL HEALTH OUTCOMES, AND A RESILIENT, HIGH QUALITY OF LIFE FOR RESIDENTS AS WELL AS VISITORS

Commented [O1]: It is important in these documents to make clear that most of Montana urban areas are in the WUI. And these construction methods need to apply in most places. Paradise, Santa Rosa, CA Ft. MacMurray in Canada, Wenatchee, WA, Santa Barbara, CA have all demonstrated this is not just an issue on the fringe of town.

Commented [O2]: Statewide templates will help with consistency between cities and counties.Itwill save the local authorities time in researching these topics.

Commented [O3]: There are three levels of liability: Strict Liability, Negligence and Gross negligence. Montana applies a strict liability approach to planned burning which provides a significant barrier to using this vital tool. If we are going to have a resilient landscape and an adaptable built environment this needs to change. Numerous other states have laws reflecting this important difference. The governor should establish a task force to assess other states and develop proposed legislation in conjunction with the legislature's EQC.

Key Strategies:

- Develop and strengthen networks of outdoor recreation and tourism professionals across agencies, jurisdictions and the private sector to improve collaborative approaches to identifying risks and vulnerabilities and to adaptation planning.
- Poor air quality from smoke in the summer from wildfires is a significant threat to every aspect of this topic. Harvesting trees and other mechanical treatments combined with planned burns can significantly reduce the amount of smoke produce from a wildfire.
- Develop climate information and tools specific to the outdoor recreation and tourism sectors and include climate adaptation strategies related to outdoor recreation and tourism in local plans and policies such as parks and recreation plans and hazard mitigation plans.

Commented [O4]: Who is responsible for doing this? If you don't identify which agency is responsible then it won't get done.

Commented [O5]: This is an item that has strong linkages to section 2 on GHG emission reductions. Proactive fuel reduction that includes harvest can help store carbon in long-lived products and can reduce the need for fossil carbon emissions for energy production. This is a strong synergy related to principle #5

- Identify and support funding strategies to address local business recovery needs, particularly in the travel and tourism sectors, associated with extreme weather events.

1F: BUILD THE RESILIENCE OF MONTANA'S PRIVATE AND PUBLIC WORKING LANDSCAPES (FARMS, RANGELANDS, AND FORESTS) AND SUPPORT VOLUNTARY AND INCENTIVE-DRIVEN EFFORTS FOR CLIMATE SMART MANAGEMENT THAT REDUCES RISKS, IMPROVES BOTTOM LINES, AND ENHANCES CARBON STORAGE IN SOILS, FORESTS AND WOOD PRODUCTS

Key Strategies:

- Recognize Montana agriculture producers for their high adoption rates of soil health practices including no/conservation tillage and cover crops, improved grazing systems and efforts to maintain and restore native rangelands.
- Explore partnerships with producers and their associations to research conservation practice adoption factors, cost savings, and climate related co-benefits, such as carbon storage, increased water holding capacity in soils, and reductions in pest and disease risks.
- Within one year MT Department of Ag and Extension will work with the USDA Agricultural Research Station, NRCS soil survey experts and MT University experts to identify which crop soils can benefit the most from additions of nutrient loaded biochar. This practice will help reduce the need for chemical fertilizers and increase water holding capacity which will buffer the farmers in drought conditions and increase production in normal or better moisture years, all while sequestering carbon for centuries.
- MT Department of Ag and Climate Office Ppartner with USDA resources like the Climate Hubs, NRCS, USFS State and Private Forestry and Rural Development to ~~explore~~ accelerate adoption of farm-scale and regional on farm conservation and energy planning strategies. ~~and~~ aAlign state and federal funding programs to support producer-identified implementation priorities.
- ~~Explore opportunities~~MT DNRC, Dept of Ag partner with their counterpart USDA agencies, companies like Blue Forest Conservation and ngo's to establish pilot demonstration projects for Montana farmers, ranchers and forest landowners to diversify income streams through emerging carbon markets ~~by developing pilot projects or programs that aggregate and quantify enhanced carbon management~~in the next two years. Consider other creative efforts that reward producers for climate resilience and carbon management such as cost-share or insurance premium reduction payments, marketing and labeling tools and others.
- Some MT forests are too dense with trees and need trees to be removed with fire or harvest or a combination of both. Some forests are understocked and could store more carbon if trees were planted and some forests are rapidly growing but are nearing an economic maturity. All these forests could benefit from a carbon storage payment system that can be part of a carbon fee and dividend policy. Management guidelines for additional carbon storage and resilience to fire, insects and disease needs to be published and shared with landowners/managers so that carbon pricing can be managed in a way that creates synergies between climate resilience, wood production and carbon capture and storage. A partnership between MT DNRC and Extension, UM College of Forestry, USFS Rocky Mountain Research scientists should be established to develop these guidelines in the next 12-18 months.

Commented [O6]: If we don't include public lands we will miss a huge opportunity for both adaptation and mitigation by using the trees that need to be removed to increase resilience.

Commented [O7]: We need more widespread adoption of these practices not just research. Research is important to help document carbon gains so that farmers, ranchers and forest landowners can get paid for additional carbon capture and storage. I think two different bullets separating the research and the straight-up adoption. We can use the existing state and federal extension programs to speed up adoption.

Commented [O8]: Existing research demonstrates the efficacy of this technique it needs to be expanded and the research extrapolated to the soil survey data across the state. This should also connect with the ability of landowners to get paid for carbon sequestration on their lands. It is a great synergistic effort benefiting adaptation and mitigation goals using innovative science and technology.

Commented [O9]: Having a price on fossil carbon and a rebate mechanism for CCS would move this quickly!

- Target Farm Bill programs to private working lands that support drought, watershed and wildfire resilience needs.
- Develop a partnership between MT Department of Commerce, DNRC, USFS, Rural Development and private investors and philanthropy funds to ~~E~~expand operator and manufacturing capacity and diversification of uses of long and short-lived wood products (*see Chapter 3 for additional wood products innovation discussion*).
    - Wood fiber insulation
    - Engineered wood products that can replace carbon intensive steel, concrete and other materials for bridges, buildings etc;
    - Bio-refineries that can make jet fuel, biodiesel, clothing, adhesives, medications
    - Combined and heat and power systems at smaller scale than traditional utility dedicated power plants. Phoenix Energy as an example designs and installs downdraft gasification plants that can run generators and the heat is used for space or water heating in buildings or manufacturing processes. These distributed systems an reduce the need for as many new transmission lines and makes it easy to efficiently use the heat that most power plants waste.

Formatted

1G: SUPPORT CLIMATE RESILIENT FORESTS, RANGELANDS, AND WILDLIFE USING AN ALL-LANDS, ALL-HANDS APPROACH ACROSS OWNERSHIP BOUNDARIES

Key Strategies:

- Continue to use the Cohesive Stategy partnerships between state, local and federal agencies to (Helena 360 project and Wildfire Adapted Missoula are good examples) address wildland fire risks through coordinating interagency planning and response, supporting wildfire-adapted communities, and building resilient landscapes through ~~active~~ planned broadcast or cutting and piling then burning or harvesting or combining these tools ~~forest management~~ to improve safety and protect communities across ownership boundaries. This will include managing wildfires when appropriate to accomplish these goals.
- Use ~~forest~~ planned ~~management~~ fire and harvesting to create or maintain forest structure and composition to increase resiliency to insects, disease and uncharacteristic stand-replacing wildfires; protect municipal watersheds; and maintain the long-term capacity of forests to continue to ~~buffer emissions~~absorb CO2 serving as natural carbon capture and storage systems ~~sinks~~.

Commented [O10]: The Northwest pathways report mistakenly thinks all the biomass will go to biofuels production. I believe this is an error for several reasons: first it based its biomass estimates on the Billion Ton Study which assumed no biomass would come from forest lands 40% slopes or steeper because cable yarding equipment is not available, which is untrue for western Montana. It also doesn't take into account new tethered logging systems for steep slope using forwarder systems tied or tethered by a cable allowing them to safely operate on steep slopes; second it doesn't discuss the issues of biomass transport to central jet fuel processing plants; third we are currently burning in slash piles hundreds of thousands of tons of biomass that can rapidly used for heat and CHP applications. In addition the development of gasification chp's would be a precursor to jet fuel production. By gasifying the wood the gas could be piped to a central processing plant for production of jet fuel which would solve the transportation issue. CHP can serve as the intermediate use of biomass until the development of jet fuel manufacturing comes on line. Lastly electrical utilities need firm peaking power production especially in the winter. Combined heat and power production is very efficient and the need to heat in the winter matches the need for peak power in the winter. Biomass CHP can fill some of the peaking demand production in a fossil carbon free manner.

Commented [O11]: "active forest management" is to jargon/euphaism. We need to say what we mean – we are going to cut trees down and use them or we are going to burn them up periodically.

Commented [O12]: I think using the CCS phrase consistently will make it more understandable to the average reader.

- Maintain a diverse rangeland ecosystem that supports agriculture, recreation, wildlife and pollinators across all ownerships through coordination, flexible tools and conservation incentives.
- ~~Promote~~ Reward best management practices for building resiliency in rangelands to increase soil carbon and soil water holding capacity
- Support establishment or enhancement of infrastructure that improves grazing management on rangeland, including technologies for monitoring range and stockwater conditions and livestock health.
- Provide extension support for the adoption of agroforestry practices and permaculture that can support food production, carbon storage and improve water quality.
- Strengthen existing partnerships and build new collaborations across agencies, disciplines and jurisdictions to share knowledge and ensure the climate adaptation needs of species, habitats and ecosystems are incorporated into relevant planning and management.
- Prioritize and conduct additional research and vulnerability assessments for species, habitats, and ecosystems as part of periodic statewide climate assessments.
- Provide end users and decision-makers with information about climate change effects on fish, wildlife, habitats, and ecosystems; adaptation and mitigation options; training opportunities; case studies; recommended peer-reviewed research; and contacts in a user-friendly format. Encourage use of this information in adaptation planning and project environmental reviews. Monitor integration of wildlife adaptation efforts into state agency projects, environmental reviews, plans, and relevant communications and training.
- Strengthen partnerships between local, state, federal, and tribal government; private landowners; and conservation organizations to implement ~~landscape-scale conservation~~cross boundary landscape scale prescribed burns and harvests to increase resilience to wildfire and insects and disease so that forests can continue to store carbon after the disturbances, provide desired watershed function and wildlife habitat which are essential to the Montana economy and way of life. Only by dramatically increasing the scale and pace of such treatments can we alter the extent and severity of these disturbances.
- Protect, enhance, and restore rivers, streams, lakes, reservoirs, wetlands, and riparian areas that are critical to fish, wildlife, and plant populations. Provide for aquatic organism passage, where appropriate.
- Continue to prevent and minimize the spread of invasive species and insect and disease infestations that can be exacerbated by climate change including policies and programs for monitoring, early detection and rapid response.

1H: PROTECTING MONTANA'S WATER QUALITY AND QUANTITY FROM CLIMATE CHANGE

Key Strategies:

- ~~Promote~~ Enhancing wetland and stream function through restoring and protecting river and ~~stream~~ corridors, floodplains and wetlands to protect water quality and quantity as snowpack declines is essential. ~~and supporting related education efforts~~. Montana

Commented [O13]: The best way to "promote" this is to pay farmers for storing carbon in their soil. We need to support a carbon fee policy that provides rebates to CCS whether it is technological or natural storage or a combination of the two. Promote is too soft and vague

Commented [O14]: Silvopasture, riparian perennial plant communities grasses or woody shrubs like hazel nuts are techniques that can get more benefits from the same acres.

Commented [O15]: Too vague and not clearly tied to climate change goals.

Commented [O16]: Too weak and vague. We need actionable items and mechanisms to incentivize implementation.

DEQ, DOA and DNRC will form a coalition of municipal watersheds and agricultural irrigation providers, NRCS and ngo's to adopt price increases which will provide funding to implement water conservation and nutrient management actions such as:

- More efficient irrigation systems;
- Beaver population augmentation and human constructed dams mimicking beavers to naturally store more water in the upper reaches of watersheds to sustain flow in later summer.
- Agroforestry practices such as riparian buffers growing perennial crops to help filter nutrients and sediment from streams while also providing shade to keep temperatures lower.
- Graywater use for irrigating yards and greenspace in urban/suburban areas.

- Integrate local drought and water quality planning into other climate and land use planning efforts.
- Invest in tools to improve statewide monitoring and assessment of water resources.
- Incorporate green infrastructure and adaptive water management that combine flooding mitigation, water storage, and water quality improvement into stormwater infrastructure and natural storage utilizing ditches, floodplains, and irrigated lands.

Formatted

Commented [O17]: See additions above. I think the more specific actionable items with responsibility assigned to an organization is important.

Questions to guide partner and public feedback:

- How can Montana best coordinate climate services to bridge the gap between climate information and action to prepare communities for impacts? What should be the role of the university system and state government? The universities are key for helping bring new technology and ideas to the table and provide studies to test and evaluate them. The state government through agencies and extension services can support the private sector with information and creating funding mechanisms to provide investments in new methods. They can serve as catalysts in the process. How should this work be funded? The state should consider a tax on fossil carbon to help fund these efforts. The tax would be assessed on the source of the problem and it helps provide a market incentive to use less of it.
- How can the state best support the unique climate planning needs of local governments? How can it learn from and support the climate adaptation efforts of tribal nations? Traditional ecological knowledge from the tribes is valuable in learning to adapt. One example is: Indians used fire as a tool to manage wildfires and the vegetation landscape to support their needs for food, safety, etc. Providing a better understanding of this to the general public, landowners and agencies should be part of the process of changing our current culture's relationship to fire and its use.
- How can the state and university system better understand the climate information and support needs of businesses across key sectors of the economy: including agriculture, construction, natural resources, forestry, health care, outdoor recreation, tourism and others? Develop working groups that include trade association groups and ngo's so that the business community, conservation groups are at the table for all of these discussions.
- How can the state and university systems support planning that is adaptive to changing conditions and emerging science about climate impacts?
- How can capacity that is built to address climate adaptation goals also benefit community transition planning and strategies? How should the climate Council consider opportunities to integrate climate adaptation planning with community economic development and workforce planning needed to foster resilience and prepare for transitions? How can partnerships, information, and capacity be leveraged?
- Is there value in developing estimates of the costs and benefits of climate preparedness and impacts?
- What adaptation strategies are missing? The linkage between using slash from forest management to create biochar which can be used to mitigate concentrated animal feeding nutrient pollution problems to provide a slow release no fossil carbon based fertilizer system, that stores captured carbon from the trees in the soil while it also increases soil water holding capacity is not explicitly identified. It is a proven technique but the development of the business supply chain does not exist to have it operate at scale. Where can recommendations be strengthened or prioritized to have the most impact? Many of the recommendations are worded very softly or vaguely such that it is not clear who is responsible for implementation and what time frame it is expected to be accomplished in. If we want this plan to make a difference people/organizations need to be accountable. What other risks and vulnerabilities need to be addressed?
- How do we align existing programs and resources, build capacity and secure funding for planning and implementation of these strategies?

Commented [O18]: Another example of how a Carbon Fee and Dividend would provide the market price signal to change behavior. It is also another example of where jobs would be created in rural settings. You won't have one largec chemical fertilizer plant, rather you will have many smaller distributed plants.

2. Strategies to Reduce Greenhouse Gas Emissions

Executive Order 8-2019 requires the Climate Solutions Council to develop a Montana Climate Solutions Plan that includes recommendations to achieve an interim goal of net greenhouse gas neutrality for average annual electric loads in the state by no later than 2035 and a goal of net greenhouse gas neutrality economy-wide at a date to be determined by the Council.

The Council formed the Greenhouse Gas Mitigation Committee to begin to formulate strategies that can achieve the goals outlined by the Governor. According to the Federal Government's 4th National Climate Assessment released in 2018, "in the absence of more significant global mitigation efforts, climate change is projected to impose substantial damages on the U.S. economy, human health, and the environment. Under scenarios with high emissions and limited or no adaptation, annual losses in some sectors are estimated to grow to hundreds of billions of dollars by the end of the century. The sooner and more aggressively we take action to reduce emissions the lower the economic impact will be. It is very likely that some physical and ecological impacts will be irreversible for thousands of years, while others will be

permanent." The urgency to respond to these threats is significant, and Montana has an opportunity and obligation to our citizens and their descendants to provide leadership and both prepare for and inform future Federal policies in response to climate change.

Using available data and studies, the Greenhouse Gas Mitigation Committee began to wrestle with what at first appears to be a simple math problem derived from the Executive Order's goals, but upon closer inspection requires a dynamic understanding of the electric supply system, its regional context, and the role different sectors of the economy play in producing greenhouse gas emissions and could possibly play in reducing emissions. To understand possible scenarios to achieve the Governor's goals there are a number of variables at play, ranging from the known (future generation facility retirements, planned resource acquisitions) to the uncertain (future population growth, rate of electric vehicle adoption and the corresponding demand for more electricity, emerging technologies, etc). To address common needs of policy and decision makers, often these variables must be coupled with additional assumptions regarding cost and system integration, allowing for evaluations of whether the mix of resources and infrastructure ultimately meets widely held goals such as maintaining electric system reliability and affordability.

Several studies and models have been developed to assist states, regions and utilities understand least cost alternatives and pathways toward achieving emissions reductions goals or targets. These modeling efforts of future scenarios can help structure stakeholder conversations, better inform decision makers regarding tradeoffs, and provide the context needed to design and implement policy packages that are consistent with long-term goals.

George Box famously said that "all models are wrong, but some models are useful." The goal of a greenhouse gas reduction modeling exercise is not to correctly determine a single solution or accurately predict the future—it is to inform decisions made under uncertainty, to offer a set of measuring sticks to evaluate the compatibility of policy options and to test those options in terms of their feasibility, costs, and emission reduction potential. Given the current dependence of the economy on carbon-based energy sources, and the interactions between sectors, a modeling effort can help scope the timing of infrastructure changes, technology options, investment requirements, research, development and commercialization needs and other areas that help align public, private and academic sector goals and expectations.

The Council anticipates engaging a consultant to assist with modeling for the state that can help define scenarios to reduce emissions. In the interim, the Committee and Council members have reviewed several regionally relevant studies and modeling efforts, including the Northwest Deep Decarbonization Study completed by the Clean Energy Transition Institute (CETI) and Evolved Energy Research and presented at the December 10th full Council meeting in Helena. The study provides an economy-wide look at various pathways to achieve an 86% reduction in carbon from the baseline of 1990 in 2050 for the states of Montana, Idaho, Oregon and Washington, and the costs associated with those pathways using current technologies. The Council encourages partners and the public to review the CETI study found here: https://www.cleanenergytransition.org/meeting-the-challenge.

Commented [O19]: Thank you for explicity stating this in the report it is a critically important framework to keep in mind as the governor considers policy options.

Commented [O20]: I believe there is an overdependence in this modeling on electrification. Home water and space heating can also be achieved with passive solar. This used in combination with biomass are ways to provide heat without electricity. Passive solar/biomass hybrids are a relatively inexpensive heat source that can reduce peak demands, which is a significant issue with the massive electrification these models project. These alternatives also reduce the need for new transmission.

Most studies of our region offer a relatively similar set of findings:

- Aggressive and timely adoption of energy efficiency measures and the electrification of end uses such as water heating, home heating and cooling, and passenger vehicles are key drivers of reducing costs associated with clean energy transitions.
- Efforts to reduce the carbon intensity of electrical generation becomes increasingly important, primarily relying on maximizing renewable energy deployment. Use of very limited and intermittent reliance upon gas-fired generation to help balance loads and maintain current reliability standards amid new load growth, often significantly reduces the costs of transitions.
- Similarly, efforts to reduce the carbon intensity of fuels through increasing production of biofuels and over time relying on emerging technologies that deploy hydrogen, carbon capture and synthetic gas further reduces the intensity of these fuels and allows for even lower emissions tied to freight, aviation and other needs across the economy.
- The development of an integrated western electricity market will enable additional renewable energy development, increase system reliability, and be economically efficient, resulting in cost savings.

Many models demonstrate that this mix of solutions, appropriately timed, can provide energy services allowing for continued economic growth, provide similar or better housing, transport and public amenities, and support high levels of industrial and commercial activity. They often demonstrate that the cumulative costs of these transitions can be minimal, even when not considering the many benefits and avoided costs tied to reduced emissions, energy costs, public health benefits and reductions in climate impacts. Several Council members have outstanding concerns regarding the assumptions, costs and findings of some modeling efforts, including the work of CETI and Evolved Energy Research. Further discussion is warranted and the Council looks forward to continued dialogue to better understand these concerns to inform efforts at improving modeling to meet long term goals and evaluate tradeoffs, and better understand the limitations of current assessments.

Based upon an assessment of emissions trends by sector, Committee members have developed the following early recommendations. Recommendations receiving consensus support are offered first, followed by those advanced with dissenting views of one or more members of the Council. In some instances, dissenting views and outstanding issues have been reframed as key questions for partner and public input in the guiding questions that follow. Additional details may be found in the Committee's white papers found on the Department of Environmental Quality's Climate Solutions Council website. The Committee continues deliberations in other areas not yet developed and vetted for public and partner input.

Preliminary Council Consensus Recommendations:

I encourage the council to consider a consensus recommendation like the following:

Given the uncertainties described above related to the modeling and the unknowns around new technologies, uncertainty around predicting market responses we believe a foundational policy that puts an initially low but steadily rising price on fossil carbon is essential. This will create a market signal throughout the economy to change behavior of individuals, businesses and governments to invest in conservation and fossil carbon alternative forms of energy. Such a policy does not have to model the precise right scenarios, rather it allows the market price drive the investments by each entity to achieve their best outcome. We also believe providing the money back to people in the form of a dividend allows them the flexibility to invest their dividend as needed to meet their situation. It also provides a powerful signal to businesses to reduce their fossil carbon

Commented [O21]: There are extensive opportunities for distributed combined heat and power and/or district energy systems. Examples of these are extensive in Europe and there numerous in the US: St. Paul District Energy produces heat power and cooling, Montpelier, VT, downtown Seattle, and a couple dozen college campuses, such as the U of ID, Chadron State College in NE. These kinds of community scale distributed systems can reduce peak demand at the coldest times of the year. There is a significant opportunity to locate these kinds of systems at sawmills and other kinds of industrial sites. Utilities should be encouraged to invest in these types of systems. They are experts in delivering energy, have access to capital.

We also have over 50 existing geothermal sites around the state that could be used for energy development. In some cases it would need to be a biomass geothermal hybrid to achieve the temperatures needed to generate steam power.

Commented [O22]: This is an example of Box's point on modeling. I have reviewed the CETI preport and the Billion Ton Study it cites for considering the use of biomass. I see several problematic issues related to this bullet:

1. It doesn't explicity address the phenomenal increase in power generation and transmission that will be needed to both electrify the transportation sector and the heating sector.
2. The reliance on heat pumps in the Montana winter climate is problematic. Air to air heat pumps become very inefficient at low temperatures and need an alternative source of heat to the heat exchange mechanism. Often this is provided by electric resistance heat which is extremely inefficient.
3. The billion ton study is based on assumptions and a critical one is that the biomass from mountain slopes greater than 40% are unavailable based on the lack of logging systems to work on those slopes. First this is untrue in western MT as cable logging systems have been and continue to be used. It does not allow for the fact that new techniques like tethered logging can access this material and would be if the price was appropriate. The bottom line is there is probably close to double the amount of biomass than was estimated.
4. It assumes all the biomass should be saved for jet fuel and biodiesel production. This assumption ignores the transportation cost issues associated with biomass. These can be overcome.

Commented [O23]: Providing an low price at the beginning but steadily increasing for the next 30 years, does not provide an initial shock but then provides a predictable substantial price through time for them to base their planning on.

Commented [O24]: This kind of policy is a powerful incentive for many of the other recommendations to be implemented, from conservation to alternative energy production and agricultural and forestry CCS as well as technological CCS.

footprint to remain competitive.

SECTION I.
Energy Efficiency - Residential and Commercial Buildings, Tribal and Local Governments

2A: MODERNIZE MONTANA BUILDING ENERGY CODES AND ADMINISTRATIVE PROCESSES TO REDUCE THE EMBODIED ENERGY CONTENT, PROMOTE ENERGY EFFICIENCY AND OTHER CLIMATE BENEFITS

Description: Building energy codes are an effective way to save energy over the long term. The value of energy efficiency in properly implemented construction standards is universally recognized as the easiest and most cost-effective way to help consumers and businesses save energy and money, make housing and businesses more affordable, and reduce greenhouse gas emissions.

Key Strategies:

- Support regular adoption of updated International Energy Conservation Code (IECC) codes every 3 years, with amendments appropriate to MT. The adoption process must be accelerated to occur within 12 months of a new code being issued by the International Code Council (ICC). Consider capacity building support to meet accelerated adoption objectives.
- Require that the energy code be considered at the same time as the other codes to avoid the current situation where the energy code lags adoption of other codes.
- Require that all builders operating in the self-certification areas of the state be required to submit, to the Building Codes Bureau, a written statement that a house complies with the state energy code and/or have the appropriate state agency enforce building codes outside of local jurisdictions.
- Modify language regarding energy stretch codes to allow a jurisdiction to require compliance with that local stretch code in their jurisdiction. Explore the possibility of developing a stretch code for the entire state that would be optional for local jurisdiction adoption.
- Investigate the feasibility of requiring energy rating labeling for new home sales and new commercial buildings.
- Direct the state department of transportation to assess the embodied energy/CO2 consequences of their construction, reconstruction and maintenance work for bridges, guardrails and signage. Develop template analyses for counties to use as they assess their roads and bridges. The cost of fossil carbon must be part of the economic analysis.
- Require all state buildings consider the economic cost of fossil carbon emissions when considering the governor's E.O. on the use of wood.

Commented [O25]: To achieve the IPCC goal of staying under 1.5 degree increase, immediate short term gains are essential. Substituting materials ie wood for concrete and steel can have significant short term CO2 savings. This is something the state and local transportation departments could do immediately.

Commented [O26]: Who will do this by when?

Commented [O27]: Bridges made of wood and their designs are available in the US. http://www.woodcenter.org/

Commented [O28]: A Carbon Fee and Dividend would automatically enforce this idea.

2B: ESTABLISH A GRADUATED ENERGY EFFICIENCY STANDARD, A DEMAND RESPONSE STANDARD, AND AN ENERGY STORAGE STANDARD FOR THE STATE'S INVESTOR OWNED UTILITIES (IOUs)

Description: The rate of energy savings in Montana is quite low, around 0.5% annually. States that are high performing acquire energy efficiency at over 2.0% annually. The acquisition of energy efficiency will reduce the need for electricity generation, reducing GHG emissions. A graduated energy efficiency standard establishes specific targets for energy savings that utilities or non-utility program administrators must meet through customer energy efficiency programs. Demand Response involves reducing power consumption at industrial sites, commercial buildings, homes and other locations to

save energy and meet utility peak demands. Energy storage can provide power that can be dispatched to better integrate intermittent resources like renewable energy, but it can also provide management of intermittent demand – helping to flatten demand requirements of the utility and allow the utility to implement voltage regulation and other efforts to improve system efficiency.

Key Strategies:

Commented [O29]: Not all renewable sources of power are intermittent. Biomass, hydro and geothermal for example. Montana has access to all of these which can be developed for dispatchable base or peaking demand use. It doesn't have to be all storage. Storage is part of the mix but not the only option.
We have dozens if not hundreds of dams for water storage that do not have power generators on them ie Hyalite Canyon for Bozeman's water supply. They are potential additional sources of firm power generation at smaller scale. All three of these sources have the potential to reduce the need for new transmission lines.

- Adopt a new energy efficiency standard at 1% energy savings on an annual basis within 3 years after program implementation, then increase the standard to 1.5% annually for the next 4 years, and to 2% annually thereafter for IOUs.
    - In order to ensure that the utilities are not disincentivized from adopting policies that promote beneficial electrification, e.g., converting from natural gas or propane to solar or biomass thermal, electric heat, load growth attributable to these activities would be excluded from total sale volumes and thus would not have any effect in the calculation of energy savings that must be acquired to meet the efficiency standard. In addition the utility should be able to finance or lease solar and biomass thermal installations and provide a return on investment to their shareholders.
    - The proposal could consider specifying some amount of energy efficiency acquisition targeted at low-income Montanans. Low-income households receive significant benefits from energy efficiency acquisition since low-income customers spend a disproportionately large amount of their income on meeting energy needs.
- Adopt a Demand Response Standard that would require the state's IOUs to acquire, within 5 years after implementation, a total of 35 MW of demand response resources, calculated based on each utility's overall system contribution to Montana load.
    - Efforts could focus on 1) Load control for residential and commercial customers (hot water heaters, air conditioning) - where equipment is cycled for short periods of time; 2) Curtailable load for larger commercial/industrial operations – where operators nominate an amount of load to be curtailed when an event is called and 3) Interruptible rate for commercial/industrial operations that can curtail most or all of their load.
- Adopt an Energy Storage Standard that would require the state's IOUs to acquire, within 2 years after implementation, a total of 35 MW of energy storage, calculated based on each utility's overall system contribution to Montana load.

Commented [O30]: We need to have a business model that rewards utilities for the "negawatts" they achieve through conservation and renewable alternatives at the home or community scale.

2C: ADVANCE EFFORTS TO PROMOTE ENERGY EFFICIENCY THROUGH TOOLS LIKE ON-BILL FINANCING

Description: One of the largest barriers to energy efficiency acquisition is the upfront cost to individuals, households, and businesses. To help alleviate this issue, utilities should provide the opportunity for customers to apply for loans that are paid back in installments included in monthly energy bills. On-bill financing is an energy efficiency uptake tool that has been utilized by utilities for decades, yet has failed to gain traction in Montana. Flathead Electric Cooperative is believed to be the only utility in the state providing an on-bill financing option, having alleviated the upfront cost burden for over 500 customers in just eight years. Financing through the USDA's Energy Efficiency and Conservation Loan Program can assist Cooperatives in developing/financing programs.

Commented [O31]: Is this available for alternative energy installations? Solar thermal? Biomass thermal? If not what needs to be changed to allow it?

Key Strategies:

- Evaluate barriers to the adoption of on-bill financing in Montana and lessons learned from experiences around the country. Explore voluntary partnerships and legislative options to further incentivize adoption by Montana utilities and rural electric cooperatives.
- Establish targets for the utilities to meet in reducing their fossil carbon delivery. Financing

#6-39

thermal solar/biomass thermal at the residential neighborhood or community scale should be part of the strategy to shave peak demand. The IOU's should be able to profit from these operations so they have an incentive to promote these programs.

Commented [O32]: Adding a price to fossil carbon will help accelerate adoption of these systems.

2D: ADOPT RATE STRATEGIES LIKE DECOUPLING, TIME-OF-USE RATES, INCLINING BLOCK RATES AND/OR PERFORMANCE MEASURES TO FACILITATE ENERGY EFFICIENCY

Description: Decoupling is an approach to better align utility profit incentives with customers' energy service needs. In simple terms, under a decoupling mechanism a utility is assured of being able to recover the revenue that the Commission has authorized it to recover, no more and no less. Should the utility recover less than the authorized amount, rates would increase in order to recover those revenues. On the other hand, should a utility sell more energy than was projected when rates were set and recover more than the authorized revenue, rates would decrease in order to refund the over collection. The mechanism removes the incentive to maximize energy sales in order to achieve recovery, and thus makes energy efficiency and distributed generation options more attractive to utilities.

Currently, most (if not all) utility customers in Montana pay the same energy charge no matter when they use the energy (electricity or gas). Under this flat- rate design, the per kilowatt or per therm charge is stagnant, meaning there is no price signal to use energy during non-peak times. In Montana, peak times usually mean that a utility's generation is fully operational, meaning GHG emitting thermal units are emitting. Furthermore, increases in peak load, lead utilities to build additional natural gas "peaker" units, increasing emissions. Time-of-use (TOU) rates, on the other hand, send price signals to customers to shift load to non-peak times, such as at night or during the middle of the day.

Most Montana utility customers pay the same amount per unit (kwh or therm) regardless of the amount they use. For example, a customer that uses 600 kwh/month pays the same for each kwh as does a customer that uses 2,500 kwh per month. As such, there is no price signal to conserve energy or use the energy more efficiently. To address this issue and encourage energy efficiency and conservation, utilities and co-ops should consider adopting Inclining Block Rates (IBR). Utilities utilizing this rate structure encourage large users to reduce their energy usage through higher prices for energy consumed within the higher blocks.

Performance based measures change the business model for investor owned utilities (IOUs) operating in Montana, such that rate of return for the utility is calculated based on performance against certain pre-defined metrics rather than only spending or costs. For example, metrics could include environmental impact, mitigation of climate and environmental risks and investment risk, reliability and availability, safety, conditions for connection, social obligation, and ratepayer satisfaction. In the UK, regulated utilities receive a profit based on the RIIO Model, where Revenue= Incentives + Innovation + Outputs.

Key Strategies:

- Work with the PSC, IOUs, rural electric cooperatives and other stakeholders to advance proposals for Decoupling, TOU Rates, inclining block rates and/or performance measures.
- Consider implementing a three-tiered TOU pricing rate design. The first and cheapest tier – the low usage times – should be priced below the "flat rate" charge (e.g. $0.06/kwh) to encourage customers to shift load to these times. The second tier – average usage times – should be priced somewhere near the "flat rate" charge (e.g. $0.11/kwh). Finally, the third tier – peak times – should be appropriately priced to send a proper signal that customers should only use energy essential to home/business operation (e.g. $0.16/kwh). Committee members wish to emphasize

that TOU rates will not be applicable to large industrial, agriculture, or large irrigators who already operate under demand charges.

2E: SUPPORT PROGRAMS TO ADVANCE COMMERCIAL ENERGY AUDITS, GRID-INTEGRATED WATER HEATERS, AND MOBILE HOME REPLACEMENT

Description: In-depth energy audits are necessary for businesses, schools, government agencies, and communities to discern the appropriate energy conservation and renewable energy measures available to them. Previous Montana programs of this scope include the Montana Resource Efficiency Program and the Energy Efficiency Program. The Montana Resource Efficiency Program has a proven track record of success assisting 188 businesses and governments and authoring 48 in-depth audit reports. Energy bill savings amounted to $10,018,409, from 131,153,591 kWh and 6,766,218,000 Btu in energy savings.

Grid-interactive electric water heaters can assist with load control. By shifting water heating load from morning and evening to mid-day and overnight water heat energy requirements can be served more economically while still meeting customer needs during peak use times. Water heaters can also be controlled on a minute-to-minute basis to provide voltage support and frequency regulation service to the grid at a much lower cost than generating units or batteries.

Many Montanans still occupy pre-1976 mobile homes, considered to be among the least energy efficient housing stocks in the country. Low-income Montanans, who are least able to afford energy services, reside in these units. Accordingly, replacing pre-1976 mobile homes with newer mobile homes would not only reduce greenhouse gas emissions but would reduce low-income Montanans energy bills and improve their lives.

Key Strategies:

- Explore budget resources through the legislature to support Commercial Energy Audits.
- Develop one or more pilot programs to deploy and test grid interactive water heaters to evaluate performance and savings.
- Inventory current needs and convene stakeholders to explore a program for mobile home replacement to meet both energy efficiency and environmental justice goals.

SECTION II:
Renewable Energy, Transmission & Markets, Peak and Capacity Challenges Efficiency

2F: REQUEST A LEGISLATIVE STUDY ON THE UNIVERSAL SYSTEM BENEFITS PROGRAM FUNDING MECHANISM FOR ELECTRIC CUSTOMERS

Description: In 1997, Montana's energy utilities were restructured, which deregulated the supply of electricity and natural gas. At the time, it was acknowledged there were several activities that were undertaken by the state's utilities which provided societal benefits that could be negatively affected by deregulation. To ensure these activities continued in the future, the legislature established a universal system benefits (USB) program and approved a USB charge to be added to natural gas and electric utility bills of all utility customers. There are differences between natural gas and electric USB programs, but both programs provide funding support for three common activities: cost-effective local energy conservation, low-income energy bill discounts, and weatherization activities. Electric USB charges also fund energy research and development, renewable energy development, and market transformation programs. Natural gas USB funding is based on 1.12 % of the utility's annual natural gas revenues from the previous year. Electric USB collections were set based on 2.4 % of the utilities 1995 revenues. Over the last 20 years, there has been a decline in the effective value of electric USB funds.

Key Strategies:

- The Council recommends the Legislature evaluate and consider changes to the electric USB funding formula.

2G: ENCOURAGE EXPANDED COMMUNITY SOLAR, WIND, GEOTHERMAL AND BIOMASS POWER AND COMBINED HEAT AND POWER DEVELOPMENT AND ENACT POLICY TO ENABLE SHARED SOLAR FOR INVESTOR OWNED UTILITIES

Description: Community scale energy sources ~~solar~~ can benefit many Montanans by making it possible for them to afford investments in renewable energy without having to pay the high cost of owning a renewable energy generator. Maintenance costs are also reduced because these costs are shared by participating individual consumers. Under current property tax law, after expiration of the five-year tax holiday, these community solar arrays are treated as utility property for tax purposes.

Shared ~~solar~~ energy sources provides access for individuals, households, and businesses that may not otherwise be able to install a distributed ~~generation~~ heat and power system on-site (e.g. renters, buildings with shaded roofs, etc.). Shared solar allows the utility to control the siting of the array, which can provide more efficient solar/geothermal, biomass thermal production and more efficient grid interconnection. Shared ~~solar~~ subscribers can help finance projects, lessening burden on the developer.

Key Strategies:

- Extend or make permanent the current five-year property tax holiday for community solar energy development by electric utilities (MCA 15-6-225 "Small Electrical Generation Equipment Exemption").
- Advance legislation that clarifies investor-owned utilities' ability to offer shared ~~solar~~ district energy and cogeneration production systems programs.

2H: PROVIDE INCENTIVES FOR BIOMASS THERMAL, PASSIVE AND PV SOLAR-READY AND SOLAR-INTEGRATED DESIGN AND BUILDING

Commented [O33]: Rather than making tax breaks for a specific type of system that distorts markets; why don't we adopt a policy that incentivizes the whole array of renewables and conservation by putting a price on fossil carbon and rebating the money as a dividend to families?
Tax revenues will decline as we shift away from coal, oil and gas. We need renewable to pay their share.

Commented [O34]: This website https://biomassready.org/ provides access to a design guidebook to make community buildings ready to install biomass. Passive solar and biomass thermal are a great combination. It is far less expensive to incorporate these systems at the time of construction than to have to remodel to install in the future.

Description: In a report titled, "Solar Ready: An Overview of Implementation Practices," National Renewable Energy Laboratory experts define a solar ready building as one that is engineered and designed for solar installation, even if the solar installation does not happen at the time of construction. The report states that creating a solar ready structure improves the cost effectiveness of solar when pursued later, which eliminates barriers to future solar applications and facilitates market growth. Examples provided in the report demonstrate significant savings if solar-ready measures are implemented during design and construction versus if those measures must be taken during solar installation. Biomass Ready desing is available at https://biomassready.org/ to accomplish similar efficiencies as solar.

Key Strategies:

- The State of Montana should develop incentives that encourage biomass and solar-ready design for new buildings in Montana. The incentives should focus on two types of buildings: 1) residential (single or multi-family structures) and 2) small buildings designed for multi-family housing, commercial use, or mixed-use applications. This second group of buildings typically have flat roofs and are excellent candidates for solar.
- Incorporate biomass and solar-ready design standards into residential and commercial building codes.

2I: STUDY THE FEASIBILITY OF ENCOURAGING GREATER UTILITY SCALE RENEWABLE ENERGY DEVELOPMENT THROUGH REDUCING PROPERTY TAXES ON NEW RENEWABLE ENERGY IN MONTANA

Description: Montana currently has by far the highest taxes on renewable energy in the region compared to North Dakota, South Dakota and Minnesota. North Dakota's taxes on a 150 MW generator, for example, are only ¼ the amount of taxes on the same-sized generator developed in Montana. Taxes in South Dakota and Minnesota are only slightly higher than those in North Dakota.

Key Strategies:

- Conduct independent research to compare taxation across states and renewable energy projects to determine if rates should be adjusted for new projects. Committee members emphasize that any proposed adjustments must fully consider revenue impacts.

Commented [O35]: As stated before fossil fuels provide a substantial amount of tax revenue for MT, we will need to transition to other sources of revenue. Renewable energy production should be one of those sources. Instead of a tax cut the governor and legislature should endorse a fossil carbon fee and dividend. This will accomplish the goal of incentivizing renewable sources of energy but will not cost revenue to the state. The benefit of the Fee and Dividend is it internalizes the cost of fossil carbon into every product that uses it. This is a much more effective policy tool for accomplishing our goals

2J: ENCOURAGE THE PUBLIC SERVICE COMMISSION TO OPEN A DOCKET ON ENERGY STORAGE AND COMBINED HEAT AND POWER (COGENERATION) AT COMMUNITY AND INDUSTRIAL SCALES AND EXPLORE STATE INCENTIVES FOR THE INSTALLATION OF UTILITY-SCALE STORAGE DEVELOPMENT

Description: Information on utility-scale projects is needed to determine the feasibility of installing storage to offset intermittency of ~~renewable energy such as~~ wind or solar. Costs of storage technology are a barrier to pilot projects. The development of combined heat and power from biomass, geothermal and solar thermal and hybrids between them should also be developed. These smaller

Commented [O36]: Combined heat and power is the most efficient use of energy production. Our current system of dedicated power power plants waste a lot of heat energy to the atmosphere. When plants are located such that the heat is utilized the fuel used to produce to produce that heat is offset. Since heat is generally produced from natural gas, propane or fuel oil that means a significant CO2 savings. In a fossil C constrained world we need to extract as much useful energy from whatever source as we can. Therefore the PSC should have CHP as a high priority.

#6-39

scale systems at the community and industrial plant scale are very efficient compared to power only generation. In addition their synchronicity with severe cold period needs for heat and power allow for the ability to ramp production up for both. State incentives would help mitigate these costs.

Key Strategies:

- Encourage the Montana Public Service Commission to open a docket investigating energy storage, district combined heat and power: its costs, its applications, its feasibility in Montana, its benefits and other matters pertinent to determining whether the treatment of Montana utilities insofar as storage procurement is concerned is in the best interests of a utility's customers.
- Utility scale storage and CHP projects may benefit from pilots that allow for the development of staff capabilities internally to integrate and operate new and emerging technologies; provide information necessary to assess the demand reduction capabilities of the system under peak loading conditions; provide information regarding system resiliency in the event of widespread power disruption; allow for the integration of local renewable generation to develop and test microgrid solutions, and; provide information necessary to develop rates that reflect the overall cost/benefit of a system including initial investment, demand savings, improved reliability and resiliency, etc.
- There is substantial sunk capital costs in Colstrip 4. It provides firm power to help balance the variability of wind and solar. One way to take advantage of that capital investment, provide dispatchable power needed and reduce the fossil carbon emissions is to use torrefied wood. This can be blended with coal and it could start out at 10% and increased over time to further reduce the fossil carbon emissions. This would be a good transition tool as the development of other energy storage is development and CHP.
- Montana has 8 sawmills that could each have a 20-25 MW combined heat and power plant established at it. This could provide 160-200 MW of firm, dispatchable renewable power to help balance wind and solar. A study was conducted ~10 years ago that examined this but it did not include the fossil carbon savings and thus it appeared that coal and natural gas were cheaper. In today's situation that is an error.

Commented [O37]: These systems have already been installed and proven in other locations including UM Western's campus (no power generation) during the mid-2000's, the fracking technology brought the price of oiland gas down making the biomass less economically competitive. However we have not been including the price of fossil carbons release into the market place. By including such a price these renewable sources o energy would be competitive again.

Commented [O38]: The CHP at this scale saves on the need for large transmission lines and can scale up production as the heat demand increases thus serving the peak demand of severely cold weather. The St. Paul Distrct Energy system provides cooling in the summer by producing and storing cool water at night to be used during the day to cool buildings, so it also shaves off the peak summer demand.

Commented [O39]: Creating these plants using gasification processes and gensets would allow for the potential piping of the wood gas to be piped to a biorefinery to produce jet fuel, biodiesel or other products needed. These systems provide options for the future that we don't fully see or understand at this time.

Commented [O40]: Torrefied wood is the result of pyrolysis that eliminates the water in wood, increases the btu content per pound and is hydrophobic allowing it to be handled and fed into a boiler generation system the same as coal. When Colstrip 4 is retired the torrefied wood could be diverted to a biorefinery to make jet fuel or biodiesel.

2K: ADVANCE EFFORTS TO TAKE ADVANTAGE OF A COORDINATED WESTERN ELECTRICITY MARKET

Description: The Western United State electric grid is comprised of 38 balancing areas that create economic, contractual and practical obstacles to buying and selling electricity creating extensive market inefficiencies. As energy systems transform in response to new technologies and market conditions, opportunities to integrate the regional market for electricity to manage loads, take advantage of price and supply conditions and other factors are becoming more attractive. A regional energy market would benefit Montana due to the abundant renewable energy opportunities found within the state.

Key Strategy:

- The Governor and the legislature should actively work to build partnerships with other states toward the development of a western electricity market.

SECTION III:
Transportation

2L: ADOPT LOW EMISSION VEHICLE STANDARDS AND ESTABLISH TAX INCENTIVES FOR

LOW AND ZERO EMISSIONS VEHICLES

Description: Fourteen states have adopted Low Emission Vehicle standards and two other states, Minnesota and New Mexico, are in the process of adopting the standards, which are broadly supported by the auto industry. About 20 states have adopted tax incentives to boost vehicle sales leading to a reduction in greenhouse gas emissions while benefiting consumers.

Key Strategies:

- Begin a process, to adopt low-emission vehicle emission standards by the fall of 2020.
- Explore state tax incentives for the purchase of low and zero emission vehicles.

2M: ADVANCE COMPREHENSIVE STRATEGIES TO DEVELOP AND EXPAND ELECTRIC VEHICLE INFRASTRUCTURE AND ACCESSIBILITY

Description: The states of Colorado, Idaho, Montana, Nevada, New Mexico, Utah and Wyoming have entered into a memorandum of understanding acknowledging the value that improved availability of regional electric vehicle infrastructure offers for access to highways, promotion of tourism and recreation in rural communities, and related economic development. While private sector roles for advancing infrastructure will be critical, partnerships will also be needed to overcome initial hurdles to electric vehicle adoption attributed to a lack of infrastructure.

Key Strategies:

- The state should develop a goal for EV charging infrastructure in Montana and should take actions that will lead to the attainment of that goal. For example, a requirement to install a certain number of charging stations could be included in commercial building codes. The state could also require the installation of EV charging stations at all public buildings. Incentives could take the form of tax credits for businesses that install EV charging stations at their establishments.
- Explore partnerships with utilities to expand EV infrastructure and adoption.
- Legislation should be considered to require investor-owned utilities to file plans every two years with the Public Service Commission with the goal of accelerating transportation electrification. These plans should include such things as: an analysis of the existing market, existing policies, barriers to EV growth, the impact of rate design and the development of new rate structures that would promote the adoption of EVs. The plans, through an open, public process, would be subject to Commission approval, disapproval, or modification. Alternatively, the PSC could establish these requirements independently.
- The Montana Department of Transportation (MDT) should develop a plan to install DC charging stations at rest areas administered by the Department. There are approximately 45 rest areas (not all are open year-round) located on Montana interstate highways. Additional rest areas are located on other US routes and state highways. The objective is to provide the traveling public with sufficient charging infrastructure to make it possible for electric vehicles to traverse long distances and to make it more convenient for EV owners to travel in the state. The plan should designate the rest areas that should receive charging infrastructure, a schedule for installation, and funding requirements and sources. Due to the need to develop charging infrastructure expeditiously the plan should not look beyond 2030. As part of the plan preparation, MDT will need to consult with the Federal Highway Administration (FHWA) and address legal issues related to the placement of charging stations at rest areas. Other states are currently addressing these issues.
- The Montana Department of Transportation (MDT) would be responsible for deploying uniform signage to indicate the location of public charging stations. Consistent and visible charging signage will result in increased public interest in EVs and may help address concerns regarding range. FHWA has adopted a design for EV charging station signs. MDT would be responsiblefor

determining signage placement and funding, consistent with its usual practices regarding signage.

- Efforts to address taxation of electric or low emissions vehicles should be equitable and should avoid creating disincentives for adoption. If the intent with taxation is to provide sufficient funding for transportation system infrastructure, other metrics, rather than fuel use, could be utilized for taxation purposes, such as a tax based upon vehicle miles traveled. Another method would be to assess an annual fee on EV owners equivalent to the average amount of gas tax paid per car per year.

2N: IMPROVE STATEWIDE TRANSPORTATION MANAGEMENT TO FOSTER ALTERNATIVES AND SUPPORT THE NEEDS OF COMMUNITIES

Description: Transportation related Greenhouse Gas Emissions occur not just because our fleet uses fossil fuels, but also because of the nature of our overall transportation system. Montanan's have the 10th highest reliance on personal vehicles of any state in the nation, reflecting our geographic range, but also limited integrated transportation and growth planning and transportation alternatives.

Key Strategies:

- Create the position of transportation system management coordinator within the Planning Department of MDT.
- Develop and host a ride sharing internet tool at MDT that will enable drivers and riders to connect with each other so as to reduce vehicle miles travelled and costs for Montanans while also lessening the burden on existing transportation infrastructure.
- Develop planning for expanded bike infrastructure including protected bike lanes working with appropriate local jurisdictions.

SECTION IV:
Industrial, Oil and Gas, Agriculture and Forestry

2O: IMPROVE GREENHOUSE GAS EMISSIONS AND CARBON SEQUESTRATION INVENTORY AND ACCOUNTING SPANNING NON-ELECTRIC AND TRANSPORTATION SECTORS ACROSS MONTANA'S ECONOMY

Description: Presently, the state lacks a comprehensive inventory or estimates of greenhouse gas sources and sinks spanning other critical sectors of the economy, including industrial sources, oil and gas production and agriculture, forestry and wood products. These estimates and inventories are critical to understanding economy wide strategies to reduce emissions and boost the capacity of carbon storage in healthy soils, forests and in wood products.

Key Strategies:

- Using widely available methods, develop greenhouse gas emissions and sink estimates for key sectors of Montana's economy and land use. For example the USDA Forest Service Forest Inventory and Analysis program collects data across all forest ownerships that can monitor and measure the carbon storage.
- Develop a reporting program to encourage facilities or industrial sectors that produce more than 25,000 metric tons of CO2e to annually report GHG emissions in line with federal standards or those widely used by other states.
- Explore partnerships to reduce emissions/enhance carbon storage spanning the sectors.
    - In the Oil and Gas Sector, consider directing staff at MT DEQ and MT Board of Oil and Gas Conservation to meet with oil and gas operators at a minimum of once annually to promote best management practices such as leak detection and repair, high-bleed pneumatic controllers, and the manual liquids unloading process. Work toward educating well and pipeline operators on methane gas capture and reduction infugitive emissions.
    - Consider working with the Montana Board of Oil and Gas Conservation to continue use of their Damage Mitigation Account to properly plug orphaned (abandoned) oil and gas wells for which there is no identifiable well operator. This program works toward eliminating potential fugitive emissions of methane gas along with addressing other issues. BOGC may have to adjust their environmental ranking criteria to move wellswith greater potential to emit methane to a higher priority. Steps should be taken to ensure the Damage Mitigation Account is funded as required by statute to enable proper administration of the BOGC damage mitigation program. No general fund monies are contributed to the BOGC Damage Mitigation Account.
    - In forestry and agriculture, integrate strategies with voluntary and incentive-driven approaches, including potential carbon markets, as outlined in Chapter 1. Consider use of widely available tools from the USDA for estimating greenhouse gas emissions and sinks, including tools like COMET-FARM and COMET PLANNER that allow for farm-scale and regional estimations of the benefits of conservation practices for carbon management and reduced emissions.
- Conduct a study of non-CO2 based greenhouse gas emissions in Montana, including methane, utilizing recent advances in identifying releases, spanning diverse sources. Consider other methane emission sources such as solid waste disposal facilities, agricultural operations, and hydropower sources in addition to oil and gas.

Commented [O41]: Federal Fee and dividend legislation should have a provision for rebating carbon fees when carbon sequestration practices are applied.

Preliminary Council Recommendations Advanced with Dissenting Views Expressed:

The recommendations below are being advanced with dissenting views of one or more members of the Council. In some instances, dissenting views and outstanding issues have been reframed as key questions for partner and public input in the guiding questions that follow. Additional details may be found in the Committee's white papers found on the Department of Environmental Quality's Climate Solutions Council website. The Committee continues deliberations in other areas not yet developed and vetted for public and partner input.

2P: ADVANCE EFFORTS TO DEVELOP AND DEPLOY CARBON CAPTURE AND STORAGE TECHNOLOGIES (CCS)

Description: Even as Montana diversifies its energy portfolio, fossil fuels are expected to meet a portion of the energy demand for several decades. Accelerating deployment of carbon capture and storage (CCS) technology is essential to reduce emissions from these power plants, and to support other needs such as renewable fuel production central to meeting the net-neutral goal. Moreover, more than half of the models cited in the Intergovernmental Panel on Climate Change's Fifth Assessment Report required carbon capture for a goal of staying within 2 degrees Celsius of warming from pre-industrial days. For models without carbon capture, emissions reduction costs rose 138 percent. (C2ES)

The Great Plains Institute notes that authoritative analysis by the International Energy Agency as well as the Intergovernmental Panel on Climate Change shows the critical role carbon capture must play in achieving US and global carbon reduction targets by 2050. The bulk of US carbon emissions comes from three sources; Transportation (29%), Electricity (28%), and Industrial (22%). Carbon capture enables many industries to reduce or eliminate their carbon emissions, while protecting and creating high-wage jobs. Moreover, for key carbon-intensive industries such as steel and cement, significant CO2 and CO emissions result from the chemistry of the production process itself, regardless of energy inputs. Thus, carbon capture is an essential emissions reduction tool for major industrial sectors that are otherwise difficult to decarbonize.

Governor Bullock co-founded multiple regional and national initiatives supporting carbon capture, including the State Carbon Capture Work Group, the Governors' Partnership for Carbon Capture and the Regional Carbon Capture Deployment Initiative. Governor Bullock also entered a Carbon Capture MOU in 2018 along with the Canadian Province of Saskatchewan that includes participation with the States of North Dakota and Wyoming.

Key Strategies:

- DEQ should consider seeking primacy for Class VI deep injection wells. Class VI wells are used to inject carbon dioxide (CO2) into deep rock formations. This long-term underground storage is called geologic sequestration (GS). Geologic sequestration refers to technologies to reduce CO2 emissions to the atmosphere and mitigate climate change. EPA has finalized requirements for GS, including the development of a new class of wells, Class VI, under the authority of the Safe Drinking Water Act's Underground Injection Control program. These requirements, also known as the Class VI rule, are designed to protect underground sources of drinking water. North Dakota is the only state with primary enforcement authority for UIC Class VI wells. EPA directly implements the Class VI program in all other states, territories, and tribes. State management of the program could expedite permitting while maintaining appropriate safeguards to water supplies. MT Board of Oil and Gas Conservation already has statutory authority to regulate class VI disposal wells. No application for primacy currently exists.
- Identify and dedicate state funding, raised from fossil carbon sources, to advance Carbon Capture and Storage. Development of carbon-capture technology in Montana can be encouraged with the state creating a partnership with federal Department of Energy grants in which the state leverages DOE funds by providing

Commented [O42]: Again the implementation of policy that puts a price on fossil carbon at the mine or well head is the quickest, easiest way to accomplish this. The EICDA has a provision that provides a carbon refund based on the number of tons of CO2 stored. In 10 years from enactment that would be $115/ton of refund. That is an incentive to develop and implement the technologlogical side of CCS and incentivize the biological CCS.

its own funds for CCS. Earmarking a portion of existing coal severance tax revenue would be an appropriate utilization of a portion of these revenues.

- Natural CCS can be some of the cheapest methods for mitigating fossil carbon emissions. There are multiple places and ways to have carbon benefits, from increased carbon in soil through the addition of biochar from slash instead of burning it, changed farming and grazing practices, to replacing steel and concrete with sustainably grown wood. These methods are all known and proven, the adoption could be rapidly accelerated if a payment mechanism was in place. A carbon fee and dividend that allowed for carbon refunds could provide the needed mechanism.

Formatted: Bulleted + Level: 1 + Aligned at: 0.5" + Indent at: 0.75"

Dissenting View: One Council member expressed reservations regarding this recommendation and its potential to extend the state's reliance on fossil fuels and foster disincentives for an accelerated energy transition.

Commented [O43]: The point of this council is to reduce fossil carbon emissions in whatever way is most efficient and effective. If we can accomplish that by CCS of fossil fuel emissions that is just fine we are accomplishing the goal of staying under the 1/5 degree temperature change

2Q: INCREASE THE ALLOWABLE SYSTEMS SIZE FOR DISTRIBUTED GENERATION SYSTEMS

Description: The current system size cap for small-scale generation interconnecting to the grid is restrictive for entities like commercial buildings, schools, libraries, and private businesses. The current cap of 50kW was passed in 1999 and has not been updated since. Meanwhile, solar technology has become more efficient and less costly. Increasing the allowable system size will allow users to meet more of their energy needs with solar, wind, micro-hydro, biomass, geothermal and other eligible technologies.

Key Strategy: Evaluate and institute a new cap for distributed energy systems.

Dissenting Views: Some Council members expressed concerns regarding this recommendation and indicated they may be unresolvable until utility rate design concerns are resolved. It is argued that in some instances, net metering requirements will increase costs borne by other customers who do not self-generate and create potentially serious safety risks and power quality concerns. While highly contested among stakeholders, some argue that higher rates for other customers will occur in some instances due to a failure to consider widely varying costs, rates, rate structures, and power supply and delivery issues.

Commented [O44]: The governor should work with the EQC and PSC to establish a team to analyze the appropriate rate structure.
I have solar panels and net meter. I am being subsidized by others since I am not paying for the transmissions ervice I still use. Howeversolar panels also help shave peak demand in the summer. Biomass power generation can shave peak demand in the winter. These watts are worth more than the flat rate at those times. Serious analysis is needed to determine the appropriate valuing of these distributed sources of energy including the avoided new transmission lines.

2R: INCREASE AND UPDATE THE STATE RENEWABLE ENERGY PORTFOLIO STANDARD

Description: Montana's standard was established in 2005 and has not been updated since the third increase took effect in 2015 (15% for 2015 and each year thereafter). RPS regulations vary across the country, including several states that are pursuing 100% renewable standards.

Key Strategy: Increase Montana's Renewable Portfolio Standard.

Dissenting Views: Some Council members expressed concerns regarding this recommendation. Issues regarding the magnitude of the revised standard, the role of hydropower, and the relevance of its application to the state's Rural Electric Cooperatives were the primary concerns.

Commented [O45]: This is a very cumbersome and potentially inefficient policy tool. The fights over what qualifies as renewable (historic hydro or not) whether biomass should be included, should nuclear be included as it is fossil carbon free, etc. The debate devolves into which form of energy you like or dislike. A policy that is technology neutral is more fair and less contentious. A fee and dividend applied with targeted reductions in atmospheric CO2 is much cleaner and then all the technologies can be considered and compete on the basis of cost and reliability the two elements the utilities are required by law to address. It incorporates the cost of fossil carbon thus providing a level plaing field. If CCS of fossil emissions is economical that will be part of the mix. Our goal is to limit climate change to 1.5 degrees of change NOT 100% renewable energy. This is a red herring that creates socio-political battles.

#6-39

Questions to guide partner and public feedback:

- How can the state, cities and counties work more collaboratively to enforce the energy code and advance energy efficiency objectives?
- How should the state consider future renewable energy requirements for energy providers?

#6-39

- What policies should the state implement related to "beneficial electrification," which entails replacing the direct use of fossil fuels with electricity in a way that reduces GHG emissions and lowers overall costs? This statement is too narrow and presumes "beneficial electrification" is the answer instead of one of many answers. You have forgotten the George Box quote you included earlier about all models are wrong, but some are useful". The policies to implement should not presume the answer based on the modeling. There are significant opportunities for fossil carbon reduction outside of electricity. We need policies that incentivize reductions of fossil C emissions in a way that unleashes the power of entrepreneurs, market incentives, efficiency/conservation gains and CCS. We need policy that signals the release of fossil carbon in the long-run (next 30 years) is unacceptable. And in the short run the cost will steadily increase, at a rate that will drive the desired reduction. A Fee and Dividend can do that. The bill H.R. 763 starts out at $15/ton and goes up $10/ton/year provided it meets the targeted reductions, if it does not then the price goes up $15/ton per year. It starts out with little economic pain but it signals to every citizen, business, organization and government entity the price pain will get very large and you better figure out another way. The cost in 10 years would be $115-140/ton in 20 years $215-290/ton and in 30 years $315-440/ton, and it would be adjusted for inflation.
    - How should the Public Service Commission evaluate greenhouse gas impacts of decisions and rate-payer risks? Every decision should factor in the cost of fossil CO2 emissions that are currently externalized from the price of energy. Society is bearing the cost of climate change through wildfire fires, floods, drought, etc. It is being borne by taxpayers, individual businesses, farmers and ranchers, health care, etc. They must start internalizing the costs to the source: fossil carbon emissions.
    - What policies to further advance clean energy solutions should be considered for the unique business model facing the state's rural electric cooperatives? Fee and Dividend, see above. How can the state advance voluntary measures in coordination with electric co-ops? The co-op owners and customers are the same. With a fee and dividend they can absorb the initial cost increases through their dividend. The co-ops can make investments over time to reduce their fossil carbon intensity which will reduce the cost.
    - Are there improvements that could be made to the way the state engages with local governments, counties and tribal nations regarding transportation projects and planning? What programs or policies should the state implement to ensure our communities are accessible and affordable while addressing issues related to vehicle congestion and miles traveled?
    - How can state agencies continue to foster leadership around sustainability, clean energy and emissions reductions?
    - How can the state assist and learn from local government and tribal nation greenhouse gas reduction efforts?
    - How should the state consider possible economy-wide emissions policy proposals such as a price on carbon or cap and trade proposals? Carbon Fee and Dividend affect every product or service that uses fossil carbon and therefore the incentive to reduce that affect is felt throughout the whole system and families and businesses will adjust. Cap and Trade systems are much more difficult to implement throughout the whole economy, require much more cost in administration and how to spend the fees from trading can easily be caught up in debates over "favorite" solutions. Fee and Dividend is not susceptible to similar problems.
    - How can Montana best lead on efforts to reduce greenhouse gas emissions? Investments in charging stations at rest stops, as suggested here are an excellent way to facilitate the transition away from fossil fuel transportation. Tax credits for gas stations to install charging stations would further expand the network. How should the state consider policy options and

Formatted: Comment Text, Right: 0", Space Before: 0 pt, Line spacing: single, No bullets or numbering, Tab stops: Not at 0.76" + 0.76"

Formatted: Font: 11 pt, Underline

solutions in the context of potential Federal policy or policies? Federal policy is actively being developed as evidenced by multiple bills in the House and Senate. The establishment of a bipartisan Climate Solutions Caucus in the Senate last November involving 4 republicans, 3 democrats and an independent with the sole purpose of drafting legislation is significant. The governor, legislature, county commissioners, mayors and city councils should endorse and promote to our congressional staff the need for a fee and dividend policy as I have described elsewhere. It is vital to have CCS language that rewards both technical/industrial as well as natural methods.

- How should the state consider new technologies in planning for greenhouse gas mitigation like renewable hydrogen or modular nuclear? Montana should join/form a consortium with the other states, BPA, University expertise and US DOE in the Columbia River basin where we have an abundance of hydroelectric dams and the potential for abundant wind resources, the combination of which has great potential for electrolysis of water in off-peak demand times to generate H2 and O2 that can be used as energy storage, piped to locations for transportation use, etc. Adoption of a Fee and Dividend policy would send a signal to potential developers of such system to engage as they would have price predictability which is needed when considering large capital investments in new technology.
- How should the Council think about balancing regulatory and incentive based tools? How should the Council consider fiscal impacts and revenue sources for incentive programs? Montana is heavily dependent on tax revenue from fossil fuel extraction and use. Our goal in this plan is to substantially reduce its use to the point where the only use is in combination with CCS. We need to recognize tax credits make this situation worse. If there is a Carbon Fee and Dividend policy passed we should consider phasing out energy tax credits of all kinds. We should also consider a state carbon tax of $1-5/ton to cover the costs of research and development for climate change mitigation and adaptation; also financing infrastructure like charging stations at rest stops and to cover the cost of tax credits for gas stations that install charging stations and other needed infrastructure.

Formatted: Condensed by 1.65 pt
Formatted: Condensed by 0.1 pt
Formatted: Condensed by 0.2 pt
Formatted: Condensed by 0.2 pt
Formatted: Condensed by 0.2 pt
Formatted: Condensed by 0.15 pt
Formatted: Condensed by 0.2 pt
Formatted: Condensed by 0.2 pt

3. Capturing Innovation Opportunities in Montana's Response to Climate Change and Addressing the Needs of Workers and Communities in Transitions.

Formatted: Condensed by 0.15 pt
Formatted: Condensed by 0.15 pt
Formatted: Condensed by 0.2 pt
Formatted: Condensed by 0.15 pt
Formatted: Condensed by 0.15 pt
Formatted: Condensed by 0.15 pt
Formatted: Condensed by 0.2 pt
Formatted: Condensed by 0.6 pt

Section I. Montana's Innovation Landscape

Responding to the impacts of climate change in Montana will require new technological approaches to agriculture, energy systems, forestry, infrastructure, and carbon mitigation and storage, among others. Developing and commercializing new technological approaches can generate opportunities for Montana to create new jobs, private investment, public funding, and businesses.

The Technology Innovation for Climate Solutions and Community Transitions Committee was tasked in part with developing strategies to support the research, development, commercialization and adoption of new technologies to address climate change. The approach the Committee has followed is to define and identify existing elements of the "innovation landscape," or the systems, networks, and partnerships that align the state's unique skills, assets, and institutions to support technology and policy innovation. The focus on the innovation landscape is consistent with emerging economic development literature and practice in the changing U.S. economy.

Defining Concepts of the Innovation Landscape

Innovation: Innovation is defined as new combinations of existing knowledge, capabilities, and resources that contribute to social and economic change. Innovation does not necessarily require new invention but is focused on implementation or putting new or existing ideas, processes, and technologies into practice in novel or new ways. In the context of climate change, using existing technologies will be critical for implementing immediate to short-term climate solutions. New inventions will also be important, as our state looks to develop technologies for reducing emissions and adapting to impacts not just in Montana, but nationally and internationally, as well.

Innovation Landscape: The innovation landscape is the networks, systems, and institutions that can be aligned to define and act on strategic priorities. Elements of the innovation landscape include the institutions (universities, government, non-governmental organizations, industry associations, and labor unions), the policy environment and culture among these institutions that allow them to collaborate and leverage unique strengths and skills, financing (e.g., venture capital, government grants, private foundations), physical assets and materials, and human capital.

Assessing Montana's Innovation Landscape: Strengths and Assets

Employing an innovation landscape approach will help Montana stay nimble given market uncertainties.

Assessing the capacity of Montana's innovation landscape draws on existing models of how innovation often occurs. The innovation process is commonly described as a series of steps, from basic research through to commercialization. The innovation process is rarely linear, however. Knowledge and hard lessons are learned at each step, which leads to better understanding and advancement in research, product development and ultimately commercialization.

For the purposes of the Montana Climate Solutions Council, a critical opportunity for capacity building evident in Montana's success stories and those of other existing state innovation initiatives is that realizing the fruits of innovation most often requires collaboration and support from public and private institutions. A review of state and regional innovation initiatives in the U.S. reports that "continuous public investment has been critical in training a large number of people over many years and in creating the necessary environment to foster new technology-based businesses." Basic and applied research, for example, benefit from public investment and informal or formal collaboration networks among public universities, government, and the business community. Public investments and partnerships remain

important throughout the product development and commercialization process. Integrating public, philanthropic, non-governmental, and private institutions is a basic requirement of a functional innovation landscape.

The Committee has reviewed several case studies of the Montana Innovation Landscape demonstrating existing assets and strengths and gaps. The case studies are intended to help identify recommendations that could support Montana's efforts to better integrate existing components of the innovation landscape and suggest direct actions to build needed capacity in Montana institutions as well as address gaps in other elements of the state's innovation landscape.

Case Studies

Assessing Montana's innovation landscape benefits from exploring case studies of existing research, product development, and commercialization efforts to understand why they succeeded or failed in practice. Case studies serve multiple purposes: concrete examples of actual projects will help communicate how the innovation landscape is defined and elements function as well as the interplay between the elements; case studies focus on what is actually happening in Montana and can help assess why some projects succeed or fail; and case studies can help identify opportunities to adapt the innovation landscape and explain how new opportunities can be leveraged.

Case Study: Absaroka Energy's Gordon Butte Pumped Storage Project

Absaroka Energy Expects to break ground soon on a closed loop pumped hydro energy storage project in Meagher County. The installed generation capacity will be 400 MW with estimated storage of 3400 MW-hrs. It will utilize 3 pairs of pumps and turbines to allow rapid switching (or simultaneous) pumping and generation. The rapid response combined with large power and energy capacity will mean the facility can be used for peaking, firming, frequency control, and a variety of other ancillary benefits that can allow utilization of a larger percentage of variable renewable energy in the state's power portfolio. This will be the largest pump storage facility in the US and the first built in approximately 40 years. It will also be one of the few utility scale storage facilities in the country.

Commented [O46]: There is no discussion of how the innovation landscape helped make this happen.

Case Study: Montana's Photonics Cluster

Photonics is to photons (light) as electronics is to electrons and is critical to lasers, sensors, measurements and automated vision, medical technologies, defense technologies and other sectors. The first photonics company in the Gallatin Valley was Orionics (fiber splicing equipment) in 1980 (ended operations in 1987) followed by Big Sky Laser in 1981, Toomay-Mathis and Associates (TMA, light scattering measurement) in 1984, ILX Lightwave (Diode laser and fiber optic equipment) in 1986, and Scientific Materials Corp (Laser Crystals) and Lattice Materials (infrared optical materials) both in 1989. Five of these six companies had connections to either Montana State University (MSU) or the Gallatin Valley. MSU faculty began collaborations with TMA, ILX, and Scientific Materials and in 1992 four MSU faculty members wrote a proposal to the National Science Foundation's Experimental Program to Stimulate Competitive Research (EPSCoR), that strengthened these collaborations. EPSCoR funding

coupled with institutional resources resulted in five additional faculty hires in photonics and the Optical Technology Center (OpTeC) received formal Board of Regents center status in 1995. There are now over 30 companies with about 600 employees in photonics in Montana, largely located in Gallatin County. Approximately 15 were spun out of MSU research and others were attracted by the desirable location, access to a strong research university, and availability of a high-quality workforce. Montana Photonics Industry Alliance formed in 2013. The Montana Photonics cluster is the fourth largest photonics cluster in the nation, the largest per capita, and a major contributor to the Montana economy.

Case Study: Hydrogen-based Storage of Renewable Energy

Converting waste water into a renewable energy battery system presents an emerging economic opportunity for several components of Montana's innovation landscape. Mitsubishi-Hitachi is in the early stages of a proposal to produce hydrogen gas in Montana, store it in Utah, and deploy new technologies to generate electricity for western utilities by burning 100 percent renewably sourced hydrogen. Montana's competitive advantage for this multi-state concept is to utilize treated waste water from the Berkeley Pit in Butte and potentially from Silver Lake as a water source for electrolysis that splits water molecules into hydrogen and oxygen. Electrolysis is an energy-intensive process that can be turned on and off to utilize excess renewable energy when the sun is shining, the wind is blowing, and electricity demand is relatively low. The Berkeley Pit is a scarce source of water in the western U.S. where many basins are closed to new water development and climate projections indicate increasing stress on water supplies.

Renewably sourced hydrogen potentially could serve as the foundation for a clean energy hydrogen economy that includes hydrogen fuel cell technology development and commercialization for transportation and other uses in addition to utility-scale production of electricity. This sector could create many jobs and businesses in wind and solar energy development, in construction, electrical trades, and engineering. Restoration job opportunities also may exist as treated water from the Berkeley Pit may also have beneficial in-stream uses, which may require a sophisticated balancing to accommodate both ecosystem restoration objectives and clean energy development. Combustion of H2, initially blended with fossil gas and eventually 100% H2, to generate electricity in Montana would produce water vapor that could be captured and put to beneficial use.

Case Study: Montana Emergent Technologies Commercialization of BioSqueeze, MSU's Well Sealing Technology

Montana Emergent Technologies (MET) is commercializing a technology developed by Montana State University's Energy Research Institute (ERI) and Center for Biofilm Engineering (CBE). This technology uses bacteria that catalyze formation of calcium carbonate (calcite, the same substance as "boiler scale") which can be used to plug small aperture seeps in wells (typically outside the production casing in the cement between the casing and the formation rock) that can cause methane emissions to the atmosphere. Because the bacteria and other required materials can be delivered in low viscosity water solutions, this method works well for small seeps that are difficult to seal by pumping cement which is higher viscosity. MSU developed this

technology at bench scale, tested it at an intermediate scale and performed four field pilots with MET involvement. MET is now commercializing in the DJ basin in Colorado and in 2019 has sealed nine wells owned by two different companies with a 100% success rate. These include 4 wells that were being plugged and abandoned, one of which the company spent in excess of $1M trying to remediate, and 5 active production wells.

Case Study: Emerging Markets for Climate Smart Agriculture

Heavy precipitation events, unusual seasonal weather patterns, and a trend of hotter, drier summers are driving growing interest in climate-resilient agriculture among farmers, consumers, food companies, and state and federal agencies. Institutional and venture investors, philanthropic foundations, and state governments are now stepping up to provide financial incentives for farmers and ranchers to adopt such practices, especially soil health practices that build and retain organic matter, maintain continuous cover, and minimize tillage and chemical disturbance. A marketplace has emerged to reward farmers for increasing and sequestering soil carbon. Market players include California's Climate Smart Agriculture program funded through the state's carbon cap-and-trade program and Indigo Agriculture, a start-up company funded by more than $850 million in venture capital, which aims to sequester one trillion tons of carbon dioxide from the atmosphere by incentivizing farmers to adopt regenerative agriculture practices.

Given its vast agricultural landscape and breadth of innovative farmers and ranchers, Montana is well positioned to tap into this emerging market for carbon-rich soils. Western Sustainability Exchange (WSE), a non-profit based in Livingston, is collaborating with Montana ranchers and state and national partners in a pilot project that does just that through its Montana Grasslands Carbon Initiative. Partners include Montana State University, NativeEnergy (a Vermont-based company that develops carbon projects and sells verified carbon offset credits), Soils for the Future (a soil science organization based at Syracuse University), and Xanterra Parks and Resorts (the country's largest park concession management company and Yellowstone and Glacier National Parks' primary concessionaire). The grasslands carbon program incentivizes ranchers to improve their grazing practices and thereby sequester large amounts of carbon. For doing so, ranchers will be compensated with carbon offset payments based on the additional amount of carbon they sequester each year. The sequestered carbon becomes the basis for verified carbon offset credits which NativeEnergy sells to companies committed to reducing their carbon footprint.

Preliminary Council Consensus Recommendations:

An important task of the Committee will be to conduct asset mapping that can identify real opportunities in Montana to leverage existing partnerships and opportunities into actual projects. One of the primary goals of the Committee work is to build a strategy around technology research, development, and commercialization.

Recommendations for technology innovation are required beyond the energy sector and across multiple geographies. The urban/rural divide is widening, and solutions are required for all types of communities,

particularly rural communities. Focusing on rural landscapes and communities may also provide unique opportunities to leverage resources, partnerships, and innovation that may be overlooked as most efforts and attention are typically focused on cities where investments theoretically return a higher "bang for the buck." Technology innovation in agriculture, timber, manufacturing, and other sectors are an important focus for the Committee.

3A: MONTANA, LED BY THE MONTANA SCIENCE AND TECHNOLOGY COMMITTEE AND THE OFFICE OF THE COMMISSIONER OF HIGHER EDUCATION, SHOULD IDENTIFY KEY OPPORTUNITIES FOR TECHNOLOGY-LED ECONOMIC DEVELOPMENT, PRIORITIZING AREAS THAT ASSIST WITH CLIMATE CHANGE TRANSITIONS AND MITIGATION

Key Strategies:

- Revise and update Montana's Science and Technology plan with a focus on industry linkage opportunities and opportunities to foster and sustain competitive industry/university collaborations in basic and applied research.
- Within identified areas of strength, charge and fund key networking organizations (i.e. industry organizations, university research centers, or state agencies) with regularly convening key university/industry/society players.
- Within the Montana University System, institute seed-granting opportunities and research capacity building efforts to grow the state's university expertise and competitiveness in each identified area of strength.

3B: THE MONTANA LEGISLATURE SHOULD INVEST IN INITIATIVES THAT BUILD UNIVERSITY/INDUSTRY/SOCIETY INNOVATION LINKAGES TO ADDRESS KEY MONTANA CHALLENGES, INCLUDING CLIMATE CHANGE

Key Strategies:

- Institute a state-funded grant program to further develop research capabilities and user facilities at Montana's public universities, with a goal of leveraging these facilities to grow innovative Montana-based technology development companies and clusters.
- Develop a recruitment and retention funding pool for strategic growth in research capabilities in key areas of state need.
- Appropriate further rounds of funding for the Montana Research and Economic Development Initiative to encourage applied research addressing Montana needs.
- Set aside a match-funding pool to increase Montana researcher's competitiveness when pursuing federal grant dollars.
- Develop / Identify and appropriately fund a research center or institute charged with networking and organizing university research and university/industry linkages statewide in the area of energy innovation. Key areas of focus based on Montana's industry and existing research

Commented [O47]: Does this include energy conservation practices? Deep energy retrofits where new or augmented windows in combination with wood fiber insulation in walls and ceilings can make existing homes, commercial buildings use less carbon and save considerable money in the long-run. Low cost fossil fuel and access to capital have been the major barriers. Bringing together the innovation landscape of businesses, utility and credit union loan programs along with a price on fossil C could create the right environment for this to move rapidly. It would create jobs and product demand for the new wood manufacturing plant planned for NW MT.

expertise may include biofuels, energy storage, transportation grid electrification, and energy related agricultural practices.

3C: IMPLEMENT THE RECOMMENDATIONS CONTAINED IN THE 2017 PROJECT REPORT -- THE MONTANA JOBS PROJECT, A GUIDE TO PHOTONICS AND ADVANCED ENERGY JOB CREATION

Key Strategy:

- Create a task force consisting of appropriate state agency personnel with representatives of the Montana University System and the Montana Photonics Industry Alliance (MPIA) to review *The Montana Jobs Project* report recommendations and advance them as deemed appropriate.

3D: CONTINUE THE STATE'S EFFORTS TO EVALUATE, EXPAND EXISTING AND RECRUIT NEW INDUSTRIES TO MONTANA THAT REDUCE CARBON EMISSIONS OR SEQUESTER CARBON WHILE PROVIDING WELL-PAYING JOBS AND INCREASING TAX BASE

Key Strategies:

The primary benefit of this recommendation is to leverage existing efforts and successes in sectors where Montana exhibits comparative and competitive advantages. The following are examples of existing efforts by the state to develop industries that will help address climate change. More work is required to identify additional industries and to evaluate their current needs relative to the innovation landscape.

- Advanced Energy Storage – including efforts to produce advanced batteries or battery components, pumped storage hydroelectric projects (case study noted previously) is designed to balance variable power and could firm over 2GW of renewable energy generation. Renewable hydrogen storage and energy generation project
- Agriculture – including efforts to develop agricultural practices / projects to increase soil carbon, efforts to facilitate the emerging market for carbon-rich soils, value added-processing, precision agriculture and others.
- Biofuels – including opportunities to produce aviation jet fuel or fuel for heavy duty truck transport from woody biomass.
- Forestry - Mass timber construction and wood products innovation – including efforts to developnew structural construction materials, ~~and~~ products like wood-fiber insulation and wood gasification for combined heat and power as well as biochar production that can be used in agricultural applications.

Commented [O48]: It is important for you to know the CETI report relied upon the Billion Ton study which grossly underestimates the amount of biomass available in MT. An assumption applied in the analysis assumed no biomass was available from slopes greater than 40%. This is not true although the number of loggers working on those slopes is limited. The expansion of the current market in MT and an increase in biomass price changes the amount available dramatically. This is an example of why the George Box quote is so important to keep in mind. It also shows how important developing a market is so we can achieve the forest adaptation needs discussed in the early part of this report.

Section II. Building Resilience to Prepare Montana's Communities, Economy and Workers for Transitions

Montana's economy and energy sectors are undergoing rapid transitions. These transitions result from a series of market, policy, and technology developments that are largely outside of Montana's direct

#6-39

control. Impacts on natural systems, infrastructure, and sectors of Montana's economy as a result of

climate change will introduce new challenges and changes that Montana will need to respond to. The important point is that while transitions destabilize existing communities, businesses, and public institutions— necessitating efforts to minimize negative impacts—*transitions also create opportunity for new, creative innovations, and systems to emerge.*

The Council was tasked by Governor Bullock's Executive Order 8-2019 with identifying strategies to prepare Montana's communities, economy, and natural systems for transitions associated with climate change. The Technology Innovation for Climate Solutions and Community Transitions Committee focused on resilience as a framework for assessing the existing capacity of Montana's public institutions (state agencies, political leaders, and the university system) to help families, communities, workers and the economy prepare for and respond to change.

Drawing from the literature and the expertise of Committee members, the Council has laid out a preliminary definition for transitions and the key components of resilience. Highlighted here are the Committee's early discussions and outreach to identify key vulnerabilities and barriers that challenge the resilience of families, communities, workers and businesses in Montana. Additionally, the Committee's framing draws on the experience of the Resources and Communities Research Group (RCRG) at Montana State University working with rural Montana communities.

Transitions are defined most simply as changes from one state to the next. Montana is already experiencing rapid and dramatic transitions in the state's energy markets and policy, economic geography, and economy. Rather than focus on a list of sectors or communities facing transition, the Committee has defined transitions as system changes that affect multiple things at the same time—families, communities, economic sectors, natural systems, or technology—and which occur at multiple scales, local to regional. Working with a focus on transitions in systems, the Committee can identify processes that explain how transitions happen in general, and how the state can prepare for ongoing transitions and for economic, demographic, and natural changes that are still uncertain or unknown.

For example, Montana and the U.S. are experiencing a structural economic transition away from manufacturing and natural resources sectors to services and innovation-related activities that began in the mid-1970s. The transition is driven by productivity gains in primary and secondary sectors and trade that has reduced the number of high-wage, skilled jobs in traditional sectors. Consequently, the state's economic geography has changed over the past several decades: today, most new growth is concentrated in the state's largest cities and many rural communities are falling behind. These economic and geographic changes interact with natural resources and climate related impacts on communities. For example, the forest industry has restructured and automated in ways that require fewer workers, affecting rural communities and labor. Existing infrastructure and planning systems limit the capacity of the industry to treat forests at higher risks of wildfire due to climate change, historic forestry practices, and greater risks due to development in the Wildland Urban Interface. These interlinked transitions will require coordinated planning and responses from public agencies, communities, labor, universities, and industry.

Although transitions will have negative impacts for some Montanans to negotiate, preparing for and making the transitions will also provide opportunities for others~~positive aspects~~ and we need to do our best to match these two sets of people together. Building the resilience and capacity of Montana's communities will focus on collecting and sharing information, supporting sustained and robust

Commented [O49]: I am going to push back on part of this narrative. Given climate change we will see the fossil fuel industry decline dramatically in the next 3 decades. However the forestry and wood products will see a dramtic resurgence. This is evidenced by the Mass Timber manufacturing boom that is occurring around the world. This will only accelerate. The demand for wood fiber as insulation materials, feedstocks for energy, both CHP and liquid fuels will grow substantially. The opportunity to grow more wood by extending rotations on corporate ownerships and affording to do forest stand improvements/hazard reduction treatments all point to a substantial increase of raw material and the need for skilled workers in the forest and in rural communities near the forests. Your statement here is too broad brushed. The new processing plants will be highly automated so the number of workers will be a fraction of the number needed 40 years ago but that is true of virtually everything. These new plants are going to produce secondary and tertiary products for use in the urban areas so much of the construction will be in the wood manufacturing plant instead of onsite in the urban location so we will see a migration of some of those urban jobs to more rural locations.

Commented [O50]: Infrastructure can be developed, planning and the development of social license can be changed and needs to be changed for the very reason of the risk to WUI which carries into the heart of most Montana cities. This council with the diversity of organizations represented can be an effective tool to help build the social license for taking actions that will help all Montanans in the long-run. We can't hold onto old ways of thinking from the '70's and 80's on forest management. The work done on National Forests over the past 25-30 years is dramatically different from earlier decades. We need to embrace the changes made and map out additional changes given the path the changing climate is mapping for us. Building resilience in the forest, capturing and storing or using biogenic carbon in the trees that need to be removed are compatible goals. Growing trees larger and longer can store more carbon AND make more wood available to a sustainable society.

#6-39

planning, and prioritizing

local economic development strategies. The Committee is focused on the concept of resilience to better understand Montana's vulnerabilities and risks and identify recommendations where public policy and institutions can act.

Addressing vulnerabilities and removing barriers to increase Montana's resilience to climate change will require sustained and meaningful collaboration and partnerships among public institutions, business and labor organizations, non-profit and philanthropic organizations, and community leaders.

Efforts to plan for community transitions can be synergistic with climate adaptation planning. Partnerships, information, and capacity built in communities, state agencies, and other partners can be coordinated. The Council encourages readers to think about recommendations and key questions in the climate adaptation and community transition sections of this report to identify how they can be coordinated.

Preliminary Council Consensus Recommendations:

The most effective policies for building the resilience of Montana's communities, institutions and economy are those that directly address identified vulnerabilities or replace barriers with new capacity and opportunity.

3E: Adopt and support the Montana Ready Communities Initiative

Key Strategies:

- Explore dedicated funding to staff the initiative and offer capacity to communities. Communities must be resourced to collect and share information, maintain peer to peer learning across communities, identify and prioritize local needs, and implement strategies to build resilience. Communities that make planning a habit and have strong networks are better able to respond to shocks.
- Disseminate statewide the Montana Resiliency Toolkit developed from the Montana Ready Communities Initiative (MRCI). The Montana Department of Commerce will work with the Climate Solutions Council to lead this effort that is currently underway as a component of the Montana Resiliency Framework developed by MRCI. The distribution of the toolkits will hopefully have a positive effect across Montana as communities use these tools to conduct resiliency planning
- Determine how the Department of Commerce and MRCI can support the emerging network of tribes, local governments, and other entities or stake holders from across Montana that have adopted climate action plans through MSU Extension's Climate Smart Montana effort. Develop strategies to link communities or entities that have capacity and experience creating and implementing climate action plans with interested parties who may lack capacity or resources.

3F: Prepare Montana's workforce for opportunities in a changing economy and in sectors important to climate mitigation and adaptation

Key Strategy:

- Expand funding and capacity for apprenticeship programs and partnerships between technical colleges, businesses and labor that provide wage earning opportunities through periods of on-the-job training and transitions.

  [The Council looks forward to working with labor, state agencies, and other stakeholders to agree on and propose additional recommendations. Council members encourage readers to review the detailed questions below regarding workforce recommendations.]

3G: Reform Montana fiscal policy to address economic transitions

Key Strategies:

Montana's economy is transitioning away from natural resource sectors and toward services. The economic transition will have fiscal implications because of the state's existing tax structure that taxes ~~natural resource~~fossil fuel sector~~s~~ more highly than other economic activities (such as health care, the fastest growing employment sector in the state). See https://leg.mt.gov/content/Committees/Interim/2017- 2018/Revenue-and-Transportation/Taxes-Changing-Economy/Meetings/Mar- 2018/Exhibits/MontanaEconomyandTaxRevenue.pdf). Currently, two legislative interim Committees in the Montana legislature are studying and making recommendations for possible reforms to the state's tax structure. These reforms should include revenue and budget policies that help build resilience and support transition planning. For example, greater autonomy for local governments to manage volatile revenue and save for transition and adaptation needs, dedicated state and local resources to bolster and sustain adaptation and transition planning over time, and new revenue policies that broaden the tax base, address inequities and generate more sustainable and predictable revenue as the economy continues to restructure and grow.

Questions to guide partner and public feedback:

- What developing industries that address climate change in Montana would benefit from the dedicated research, development, and commercialization strategies identified by the innovation landscape? We need to be thinking of circular economies and how to make them work. This requires design and engineering rethinking, landfills and waste will become part of the past. Embodied energy will no longer be thrown away. Energy efficiency will be truly valued financially as the price of fossil carbon is internalized. Here are a few that should be focused onin the near term:
  - Wood products and construction - Engineered wood products that can make big wood out of small pieces, wood fiber insulation and manufacturing processes that make and ship house components including windows, rough electrical and plumbing, etc. MT and other wood rich states have the opportunity to capture a lot of employment and conservation of resources by reducing waste and gaining

Commented [O51]: This phrasing is problematic. Forestry and wood products are natural resources, water management for cities, agriculture and fisheries are natural resources, wildlife are natural resources, reducing fire risk is natural resource management. Do you mean we are transitioning away from fossil fuel extraction? Yes that is true. Mining will still be important look at the amount of copper and lithium that will be needed to do the amount of electrification this plan calls for in transportation, wind mills, solar panels and home heating. Where will that come from? Where are all the battery minerals going to come from? The US and Montana are foolish to think we are going to import all of that. We put our national security at huge risk by relying on China for all our batteries. We need to recognize the strategic importance of mining these minerals AND we need to make sure we mitigate the pollution that can be generated by these.

Commented [O52]: This is great, this council needs to acknowledge this as part of the communication efforts of the final report.

Formatted

manufacturing efficiencies, but it needs private and public partnerships to move quickly.These technologies all exist but need the help of the innovative landscape to become a reality.

- Biorefineries – drop-in fuels and other refined products (adhesives, medicines, clothing fabric, bioplastics, etc) from wood and ag residues. Transitioning the refineries in Billings and Great Falls to using biomass as feedstocks will take time and investments of capital and training. Montana universities, departments of Commerce, Agriculture, Natural Resources and Conservation and Environmental Quality will need to be deeply involved.
- Chemical fertilizers need to be replaced with biologically based fertilizers. The production of biochar and its use in absorbing nutrients from animal and human waste require work in the logistics and infrastructure development. We currently spend millions on disposing of this "waste stream" without using the nutrients. This is a prime opportunity for the circular economy idea, but it needs the support of the innovation landscape. This helps both adaptation and mitigation goals.

- How can the Council better assess existing University capacity to deliver climate-relevant technology research? Convene a workshop(s) with industry, ag, forestry companies, agencies and federal research agencies (ARS, USFS, USGS, DOE, etc) invite philanthropic organizations with a climate change emphasis, also include investment banks and other investment companies. The purpose would be to list and prioritize sectors and topics within the sectors that need knowledge gaps filled. There should be annual meetings to report results and re-examine the priorities in case they need adjustment. The focus will be on supporting the whole supply chain. The council should consider having this a multi-state effort to capture synergies from combined resources. Idaho, OR and WA have similar combinations of mountainous forested areas and agricultural lands also similar wind, solar and hydro resources. Federal support would be easier to get if regional efforts are made.
- How can the Council best engage industry partners to form a shared innovation vision for Montana? See above.
- What is the right organizational structure that best delivers resources and capacity to communities? Organzing around groups of counties with similar resources, issues and topics to address, then it will be easy to bring in businesses that match that geography and topics Where does dedicated funding come from? A fossil carbon tax or the coal severance fund.
- How can the state consider and adopt new approaches that address the acute needs of workers in transition?
- How can climate policy address fiscal risks facing the state? It is not clear what risks you are talking about. Do you mean the increased costs for firefighting? Health risks from more smoke pollution? The risks of more flooding? The declining revenue from farmers paying taxes when droughts occur? Or are you talking about the risk of declining revenue as coal, oil and gas production go down affecting the revenue stream to the state treasury?

For the first set of questions we should impose a tax on fossil C to set up a fund to cover emergency costs induced by climate change, and assistance to businesses impacting by climate change. For the second we need to diversify the tax base to get more from tourists visiting the state and using our infrastructure, We need to turn renewable energy into a tax revenue source.

- What is the role of tax policy in confronting climate change? As stated repeatedly, a carbon fee and dividend is the most effective way to promote implementation of the innovations that are out there. It will drive many of the mitigation measures and some of the adaptation measure this paper identifies. 1% of the fee could be used to help transition coal, oil and gas displaced workers.

Key question around workforce training and transition:

Addressing ongoing and future transitions in Montana's economy and communities must address the needs of the current and future workforce. Transitions displace existing workers and Montanan's just entering the workforce must be prepared for a different set of skill and education requirements associated with different types of jobs.

The Council seeks feedback on strategies the state can pursue related to preparing Montana's workforce for transitions. The Council began conversations but did not arrive at consensus recommendations. The Council will continue to engage with the public and partners to develop recommendations for consideration in the final report. Based on emerging knowledge and best practice, we want the conversation to focus on apprenticeships rather than retraining, including linking trade and skill training in schools and community colleges to apprenticeship programs. We also want feedback on possible recommendations related to securing prevailing wages for Montana workers and providing opportunity for collective bargaining.

We also seek feedback on strategies the state can pursue to achieve workforce goals. For example, should the state use its own spending and contracting authority to require workforce goals are met (e.g., required apprenticeship programs on major public projects), should the state directly fund trade and skill programs with apprenticeship opportunity and where should funds come from, or should the state mandate collective bargaining and prevailing wages in particular industries central to meeting the state's climate goals.

Commented [O53]: I agree the use of apprenticeships is critical to the success of transitioning workers and their families. If we are going to get people working in those areas to support the policies needed to avoid the catastrophic effects coming with climate change.
Requiring prevailing wages and opportunities for collective bargaining can assure workers their interests are properly considered.

List of Recommendations:

#6-40

From: [redacted]
To: [redacted] Climate Council
Subject: [EXTERNAL] Montana Climates Solutions Council Comments
Date: Thursday, March 19, 2020 3:56:16 PM

As you well know the CEO of Montana Electric Cooperative Association, Gary Wiens, is encouraging members to plea for no more mandates to reduce greenhouse gas emissions. He is using right wing conspiracy theories to rile member. I think it is awful and totally agree with reducing emissions. Please ignore him and his ilk and mandate what you think is appropriate to force Electric Co-ops to do their part in reducing emissions and reducing impacts to climate change. Please see the March 2020 issue of Rural Montana for an example of his damaging rhetoric. I will be asking him to resign.

Sincerely,

Debra Bond

Sent from Mail [go.microsoft.com] for Windows 10

#6-41

From: [redacted]
To: Climate Council
Subject: [EXTERNAL] Fw: Emailing: The Rebuttal ~ Joe Berry & Stanford Woods Institute = Fraud CO2 = You and Me ~ by Bruce Kershaw
Date: Thursday, March 19, 2020 8:36:15 AM

From: [redacted]
Sent: Thursday, March 19, 2020 8:35 AM
To: [redacted]
Subject: Fw: Emailing: The Rebuttal ~ Joe Berry & Stanford Woods Institute = Fraud CO2 = You and Me ~ by Bruce Kershaw

From: [redacted]
Sent: Thursday, March 19, 2020 8:34 AM
To: [redacted]
Subject: Fw: Emailing: The Rebuttal ~ Joe Berry & Stanford Woods Institute = Fraud CO2 = You and Me ~ by Bruce Kershaw

From: [redacted]
Sent: Thursday, March 19, 2020 8:34 AM
To: [redacted]
Subject: Fw: Emailing: The Rebuttal ~ Joe Berry & Stanford Woods Institute = Fraud CO2 = You and Me ~ by Bruce Kershaw

From: [redacted]
Sent: Thursday, March 19, 2020 8:34 AM
To: [redacted]
Subject: Fw: Emailing: The Rebuttal ~ Joe Berry & Stanford Woods Institute = Fraud CO2 = You and Me ~ by Bruce Kershaw

From: [redacted]
Sent: Thursday, March 19, 2020 8:33 AM
To: [redacted]
Subject: Emailing: The Rebuttal ~ Joe Berry & Stanford Woods Institute = Fraud CO2 = You and Me ~ by Bruce Kershaw

CO2 = You and Me ~ by Bruce Kershaw [co2u.info]

Skip to content [co2u.info]
← Criminal Medicine by Tammy Gibson MSF@mt.gov [co2u.info]
Corona Virus as the Political Media Paranoia Strikes Again → [co2u.info]

The Rebuttal ~ Joe Berry & Stanford Woods Institute = Fraud

Posted on March 15, 2020 [co2u.info] by Bruce A. Kershaw [co2u.info]

~

~ to be continued ~

~

Nature and Known Climate History Debunk the Unproven Theory

CO2 causes Climate Warming

and Science has Debunked Falsified Data and Test Proven Lies

by Test Proven Political Pathological Frauds in Science for Profit

~

On January 1, 2011 ~ 1:58 PM

Joe Berry sent me an email copy of the Arrhenius Paper

as his scientific proof Humans cause climate warming

~

The 1896 Arrhenius Science Paper

is a Flawed Incomplete Science Paper

being used today by many as Scientific Proof Humans cause Climate Warming

~ Proving Fraud ~

and Proving Preached Political Media Doomsday Climate Paranoia

based on debunked unproven theory

is a Scientifically Test Proven Lunatic Doomsday Religion

Committing Fraud in Science for Profit

while forcing us to spend Trillions doing only Harm the Environment

they Preach to us they are Saving

~ Proven Frauds ~

who refuse to allow Question Test Rebuttal Debate in the Media they Own and Control

because they make believe their debunked unproven theory is settled science

in their Lunatic Pathological Self Brainwashed Minds

as they refuse to acknowledge NASA Science Data proving their unproven theory is wrong

as 49 NASA Scientists acknowledge this Data

while the NASA Political Wing Nuts with a Political Agenda Ignore their own Data

as our Universities are now Political Media Churches

Preaching Doomsday Religion

based on proven to be

very Flawed very Incomplete very Fraudulent Garbage Lunatic Political Science Fiction

as the Universities Refuse to Debate their Settled Lunatic Science Fiction

as they reject the scientific method for persuaded make believe

doing test proven Harm to the Environment

as they are Blinded by Fraudulent Pathological True Belief

~

Climate Change is Real

for the past 4.6 billion years

and the Media is Paranoid while the Government is Schizophrenic

and you can not Save this Carbon based Earth

by reducing the cause of Green and the Environment

CO2 + Water Vapor + Sun Energy = Green = Environment

and if you remove all the CO2 from the air this will not stop Climate Change

but you will End all Carbon based Life above Sea level

on this CO2 Starved Carbon based Earth

~

About Bruce A. Kershaw

Born ~ March 27, 1956 at 11:10 pm Long Beach California other wise I'm still breathing O2 made from CO2 and eating food made from CO2 ~ the rest is Icing on the cake ~
View all posts by Bruce A. Kershaw → [co2u.info]
This entry was posted in CO2 and Global Warming [co2u.info]. Bookmark the permalink [co2u.info].
← Criminal Medicine by Tammy Gibson MSF@mt.gov [co2u.info]
Corona Virus as the Political Media Paranoia Strikes Again → [co2u.info]

- Search for:

- **Categories**

  Categories Select Category

- **Archives**

  Archives Select Month

- **Pages**

Toyota Throttle Control. [co2u.info]
- Vote for Me [co2u.info]
- www.gadgetmangroove.com by Ron Hatton & John Balachandra & Aaron Murakami = Hoax = Scam = Fraud [co2u.info]
- www.gadgetmangroove.com ~ Hoax ~ Endorsed by ESTC [co2u.info]
- www.gadgetmangroove.com ~ Today's Hoax Special ~ $150.00 [co2u.info]
  - Dear Bernie [co2u.info]
- ~ MONTANA STATE FUND ~ WORKERS COMPENSATION ~ ROAD KILL ~ INSURANCE PLAN ~ [co2u.info]
- CBS News ~ vs ~ Proven Fact Tested Knowledge [co2u.info]
- Mark Reynolds & Citizens Climate Lobby [co2u.info]
- Edward B. Batista – Nevada City – Grass Valley, Sacramento, Davis, Trust Estate ~ Crook ~ Attorney [co2u.info]

- **Meta**
  - Log in [co2u.info]
  - Entries RSS [co2u.info]
  - Comments RSS [co2u.info]
  - WordPress.org [wordpress.org]

CO2 = You and Me ~ by Bruce Kershaw [co2u.info]
Proudly powered by WordPress. [wordpress.org]

#6-42

From: [redacted]
To: Climate Council
Subject: [EXTERNAL] comment
Date: Thursday, March 19, 2020 12:44:38 PM

Dear Council,

Montana's electric cooperatives are proven leaders in reducing greenhouse-gas emissions, and in using clean energy sources. Therefore, I do not believe additional government mandates are needed..

Kim and Greg Forbes
Stevensville, MT

#6-43

From: [redacted]
To: Climate Council
Subject: [EXTERNAL] Comment on Draft CSC Report
Date: Thursday, March 19, 2020 5:58:02 PM

Dear Governor Bullock and the Climate Council,

Thank you for your work thus far and recognition that we as a state will continue to have to face the reality of a changing climate. As a citizen of Montana, I am in full support of this initiative to raise awareness, assess threats, plan, implement, and monitor solutions to the threats we are facing. As a graduate student at MSU studying precision agriculture, I would like to share my comments and concerns about this draft, focusing on sections 1F-1H.

The focus on improving carbon storage with agriculture is critical to greenhouse gas mitigation and battling rising greenhouse gas emissions. However, I have noticed that the focus of section 1F and the majority of sections relating to agriculture focus solely on carbon. I suggest that non carbon-based greenhouse gases be taken into account as well, such as nitrogen-based greenhouse gases. For example, nitrous oxide traps 300x more heat than carbon dioxide, and ammonia and nitrogen oxides contribute to acid rain. While produced from manufacturing and other industries, the use of nitrogen-based fertilizers also contributes to these emissions, opening the door for Montana's agriculture to play a role in reducing more than just carbon emissions.

Precision agriculture provides a step towards sustainable agriculture by applying agricultural inputs such as nitrogen-based fertilizers in the right place, at the right time, and in the right amount. This has the potential to reduce pollution as well as improve farmer's profits by minimizing nitrogen lost from fields. Nitrogen fertilizer is also lost from farms through the soil, leaching into groundwater and making its way to surface water, which influences water and environmental quality. Precision agriculture can play a role in the strategies outlined in section 1G by minimizing nitrogen lost from fields, which will protect rivers, streams, and lakes and should be implemented in the water quality plans called for in section 1H. Also, in regard to section 1G, precision agriculture can be applied in weed management to prevent and minimize spread and infestations of invasive species and the influence of pests that will be exacerbated with climate change.

Finally, precision agriculture would fit well in the goals of this plan related to increasing collaboration and cooperation between government, producers, industry, and the university. Agricultural companies are beginning to invest in developing precision agriculture technology, universities are researching the implementation of these technologies, and both must work with producers to test these technologies. Government will play the crucial role of incentivizing these technologies.

#6-43

I appreciate your time and consideration of the public's suggestions,

Paul Hegedus

#6-44

From: [redacted]
To: Climate Council
Subject: [EXTERNAL] Comments on Montana Climate Solutions Plan
Date: Thursday, March 19, 2020 12:38:05 PM

To: Climate Solutions Council

I applaud the Montana Climate Solutions Council for undertaking the effort to develop the "Montana Climate Solutions Plan". A review of the preliminary document indicates that this is a thoughtful and comprehensive plan that addresses the multitude of issues related to climate change. The preliminary plan provides a framework for a coordinated approach between state agencies, local governments and community partners to prepare for severe weather events, manage costs and develop innovative solutions. Following are suggestions for the Council to consider as they continue to work on this plan.

1. Recommendation 1D. Adapt Montana's built environment to climate change. – The second bullet point in this section discusses supporting state and local code updates to further reduce risks and impacts. I would suggest that this strategy specifically recommend that climate change strategies be included as part of a local "Growth Policy". The Growth Policy provides the legal foundation for code updates and addresses a variety of issues relating to climate change such as establishing policies for capital improvements. Upgrading public facilities to be resilient in the face of climate change is another important strategy that should be reflected in the Growth Policy, Capital Improvement Plans and in the Montana Climate Solutions Plan.

2. Section 2 – There are several references in this section to "grid interactive water heaters" and grid improvements for solar energy. The Climate Solutions Plan should also reference overall "smart grid" improvements and investments in broadband/fiber infrastructure to support these improvements. In addition to interactive water heaters, smart grids support "smart thermostats" that can yield significant energy efficiency results. A smart grid also supports load management which is critical for wind energy. The Councils should consider adding a general refence to all smart grid technologies.

3. I support the strategy "2M – Advance comprehensive strategies to develop and expand electric vehicle infrastructure and accessibility." As motorists' transition from gas to electric vehicles, however, there will be implications on collection of the motor fuel tax. This tax is used to maintain roads/highways. The plan should advocate for further study on how to off-set a potential decline in the motor fuel tax if there is widespread adoption of electric vehicles.

4. Strategy 2N promotes transportation alternatives such as ride sharing and bike infrastructure. This section should be expanded to support all types of public transit as well as walkable communities. I would suggest that promoting smart growth land use principles such as in-fill development and compact communities to reduce the amount of vehicle miles traveled is another strategy that should be referenced in this section.

5. I strongly support Strategy 3E that will encourage and assist local communities in developing local climate solutions. The Community Development Division in the Montana Department of Commerce already provides planning support to local communities and would be an excellent partner in this endeavor.

6. The plan only makes one reference to solid waste in reference to methane reduction. Reducing waste and promoting local recycling can also reduce the carbon footprint by reducing transportation the necessity to ship recyclables and reducing plastics (which are made from fossil fuels). I would suggest that the final plan include strategies for reducing waste.

#6-44

Thank you for your consideration of these comments. I look forward to following the work of the Climate Solutions Council.

Kate McMahon, AICP
Applied Communications
Whitefish, MT
[redacted]

#6-45

From: [redacted]
To: Climate Council
Subject: [EXTERNAL] Climate solutions draft plan comment
Date: Thursday, March 19, 2020 3:37:17 PM

To the Governor's Climate Council:

As the United States wrangles with the threats, both economic and social, presented by climate change, Montana appears to be uniquely situated to rapidly become a leader. Montana's low population density and culture project a more manageable and recoverable spread of Coronavirus, relative to other more populous states. Later on in the outbreak, as Montana recovers and other states continue to struggle, Montana could become an appealing safe-haven. This could be an exceptional opportunity for economic development generally, but more specifically it may also give Montana to establish itself as a national leader in renewable energy.

Whereas Montana may presently have difficulty attracting the kind of talent it needs to accomplish that task, the Coronavirus crisis could give Montana the boost it needs to draw skilled technicians, engineers, and business people from around the country to take part in a burgeoning new renewables economy. Assuming that the rest of the nation and world eventually follow suit in developing and deploying renewable energy technologies, a strategic move now could solidify Montana as an economic leader going on into the future.

Coronavirus is disruptive, but with disruption comes opportunity. Please, encourage Montana to profit from this unprecedented situation. Let's provide the strong, encouraging economy the nation can look to as Coronavirus dissipates.

#6-46

From: [redacted]
To: Climate Council
Subject: [EXTERNAL] Draft Comment
Date: Thursday, March 19, 2020 12:41:44 PM

Dear Governor Bullock and the Climate Solutions Council,

Thank you for all your hard work in developing a landmark Montana Climate Plan.

I would like to address two of the questions from the **"Questions to Guide Partner and Public Feedback,"** from **Section 2: Strategies to Reduce Greenhouse Gas Emissions.**

1. *How should the state consider possible economy-wide emissions policy proposals such as a price on carbon or cap and trade proposals?*

2. How can Montana best lead on efforts to reduce greenhouse gas emissions? How should the state consider policy options and solutions in the context of potential Federal policy or policies?

These are critical questions, as there needs to be some kind of unified economic driver to lowering emissions that makes all the other recommendations in the draft feasible. As a Montana resident and a member of Montana Citizens' Climate Lobby, I believe the most effective and efficient path forward for lowering emissions in Montana is with the help of a national, market and incentive-based Carbon Fee and Dividend policy.

A slow, predictable rising pollution fee on fossil fuels will bolster all other Montana initiatives for efficiency, alternative energy, storage, grid upgrades, and support carbon sequestration in industry, agriculture and forestry.

Carbon fee and dividend is:

Effective: Reduces emissions by 40% in first 12 years using incentives instead of regulations

Good for People: Saves lives with reduced pollution and puts money in people's pockets to help during the transition

Good for the Economy: Will create 2.1 million new jobs in local communities across the US

Bipartisan: Appeals to most Americans regardless of political affiliation.

Revenue Neutral: By the government not keeping any of the money, this provides a smoother process for getting this legislation passed.

Please consider adding support for a national Carbon Fee and Dividend policy into the Montana Climate Plan.

Sincerely,
Mary Mulcaire-Jones

#6-47

From: [redacted]
To: Climate Council
Subject: FW: [EXTERNAL] Climate change
Date: Thursday, March 19, 2020 2:57:19 PM

-----Original Message-----
From: Jon Running Bear [redacted]
Sent: Monday, March 9, 2020 7:17 PM
To: McGrath, Shaun [redacted]
Subject: [EXTERNAL] Climate change

Why are we wasting money that could be better spent on 1000's of needed programs on the climate change lie? The climate will always change, that's as much a part of life as breath. These people can't predict tomorrow's weather, let alone what is going to happen in 10 years. I'm tired of these lies. And I can't wait until the next governor election. Stop wasting money on these lies.

Jon Runningbear

#6-48

From: [redacted]
To: Climate Council
Subject: [EXTERNAL] Climate Plan
Date: Thursday, March 19, 2020 3:02:16 PM

Hello-

I'm confused. I thought Montana already had an a climate plan as advocated by Initiative 187, which we are attempting to get on the 2020 ballot.

Can you clarify for me? Would this new plan replace I-187? Is this plan more comprehensive than I-187?

Thank you.

Best regards,

Barbara Ruff Sawyer
Missoula, Mt

#6-49

From: [redacted]
To: Climate Council
Subject: [EXTERNAL] Comments on draft Montana Climate Solutions Plan
Date: Friday, March 20, 2020 12:18:14 AM

Dear Council Members,

Thank you for the draft Montana Climate Solutions plan and for the opportunity to comment. While I have some specific suggestions for improvements below, I urge you to begin immediate implementation of measures to reduce carbon emissions.

Recommendations 1A through 1H should be funded and implemented. Adequate support for climate science is essential to our ability to understand risks and prepare for change. We need a better funded Montana Climate Office and increased state support to communities working to reduce carbon emissions and plan for climate adaptation.

Recommendations 2A through 2E and 2G through 2K are essential for Montana to reduce carbon emissions. Montana needs to support energy efficiency and conservation to save Montanans money, protect public health, and protect agriculture and recreation industry from the worst effects of climate change. Also critical are expanded shared solar, incentives to develop utility scale storage development, and incentives for solar ready & solar integrated design & building codes. A statewide energy efficiency standard is a key step in increasing energy efficiency.

Recommendation 2Q would increase allowable systems size for distributed generation systems – I suggest raising the cap up to 100 kW for residences and up to 250 kW for institutional installations. *This would benefit schools, libraries, and other public buildings – saving taxpayer dollars and creating educational opportunities.*

Voluntary controls on oil and gas development do not work. The industry has had decades to curb carbon emissions voluntarily and has failed to do so. Methane emissions from oil and gas development can be controlled and should be required.

Carbon capture and sequestration are unproven technologies and are not an appropriate way to address carbon emissions of coal-fired electricity. Instead, we should focus on reducing reliance on coal-fired electricity.

Please support adoption of low emission vehicle standards and actions to incentivize electric

vehicles.

Please encourage and support local communities that choose to set strong carbon emission reduction goals.

In addition, Montana's renewable energy standard should be raised to 80% by 2035. This is achievable and will create jobs and save money.

There is a need to replace the coal severance tax as coal sales drop -- a tax on electricity could replace the coal severance tax, and also fund worker retraining programs and pension security for fossil fuel workers. Please consider adding the above ideas to the Solutions plan.

Vicki Watson, Missoula, MT

Dodie Andersen, Missoula, MT

#6-50

From: [redacted]
To: Climate Council
Subject: [EXTERNAL] Public comment on Montana"s Climate Solutions recommendations
Date: Friday, March 20, 2020 9:55:06 AM

Governor Bullock,

I applaud the efforts by the Montana Climate Solutions Council to draft a Montana Climate Solutions Plan.

Based on my professional background in (forest-based) bioenergy systems analysis, I am heartened and fully support a focus on:

- **Nature based climate solutions involving forests and rangelands.** Activities in these categories provide frequently the lowest-cost and large-scale greenhouse gas reduction and avoidance opportunities.

- **A focus on the heating sector for industrial, commercial and residential applications.** The heating sector is a major GHG contributor and frequently provides the lowest cost opportunity to reduce GHG emissions, frequently associated with net savings. Supporting energy audits, a switch to heat pump technology (to heat water and buildings) wherever possible, and business concepts such as energy service companies providing heat to a multitude of customers is an excellent, cost-efficient and scalable way forward. Unfortunately, all references to electrification of the heat sector in the current plan don't mention heat pumps at all.

- **Increasing scale of distributed electricity grid production systems.** Ideally, and besides electricity-only systems such as wind, hydro or solar, this effort should also include systems that link the heating and electricity sector by incentivizing combined heat and power systems that are scaled to a local heating demand.

I am looking forward to seeing this climate plan coming to fruition. Thank you and the council again for your initiative.

Best regards,

Thomas Buchholz

Missoula, Montana

#6-51

From: [redacted]
To: Climate Council
Subject: [EXTERNAL] Comments on draft Montana Climate Solutions Plan
Date: Friday, March 20, 2020 1:26:29 PM

Council Members,

Thank you for your efforts in producing the draft Montana Climate Solutions plan. In addition to the specific comments below, please make it a priority that implementation begin immediately for those measures which can begin right away and that will help reduce greenhouse gas emissions.

-- Please support efforts to expand Montana's ability to understand climate risks and prepare for change. In particular, recommendations 1A through 1H should be funded and acted upon.

-- Montana needs more accessible climate science. Please support a larger Montana Climate Office with more staff, stronger Montana University System climate coordination, research and funding, and increased support from the state to communities so they can develop greenhouse gas reduction and climate adaptation strategies.

-- Recommendations 2A through 2E and 2G through 2K are essential for Montana to reduce greenhouse gas emissions and avoid locking into new fossil fuel infrastructure. Montana is deficient in programs and funding to support energy efficiency and conservation and the key strategies identified, if enacted swiftly and with financial support, are essential. They will save Montanans money while improving public health.

-- A statewide energy efficiency standard would save all Montanans money.

-- Raising the size cap on distributed generation solar systems (aka rooftop solar) would benefit schools, libraries, and other public buildings in their community - saving taxpayer dollars and creating educational opportunities for our youth.

-- Support adoption of low emission vehicle standards and actions that will incentivize/promote/enhance electric vehicles.

-- Please encourage and support community goal setting, energy data collection across sectors, and planning efforts to reduce emissions and save money in local communities.

-- Voluntary controls on oil and gas development are inappropriate. The industry has had decades to voluntarily curb greenhouse gas emissions and has failed to do so. Methane emissions from oil and gas development are easily controlled and should be required. The time has past for voluntary commitments from this greenhouse gas producing sector.

-- Carbon capture and sequestration is not an appropriate climate solution for coal-fired electricity. This unproven technology only makes dirty, expensive coal plants even more expensive and risky. The final recommendations should focus on reducing reliance on coal-fired electricity instead of relying on misguided, expensive, risky, and unproven technology.

Thank you,

--
Ruth Swenson
[redacted]
Helena, MT

#6-52

From: [redacted]
To: Climate Council
Subject: [EXTERNAL] Comments on the draft Montana Climate Solutions Plan
Date: Saturday, March 21, 2020 10:44:16 AM

First I want to compliment the governor on taking the important step of engaging experts and citizens in planning for an uncertain future. The current global pandemic shows that we really can stop everything and focus as a nation to address dire threats. The Climate CRISIS is no different, and indeed, in the long term, MORE IMPACTFUL.

Here are my thoughts on the current plan:

We need to base our actions on science, and to do so, we need FUNDING that will allow the science professions to focus on this problem. I know that with the pandemic and delayed tax collections and smaller tax collections, this will be a problem. Still, we need to get everyone on board, all hands on deck, and make sure that funding to find solutions is there.

Secondly, we cannot ask people to voluntarily cut their carbon footprints. The current plan has no mention of support for a carbon fee and dividend plan, which economists say would be the most effective way to motivate people to use less carbon and to develop sustainable alternatives. There is a chance that such a fee and dividend will actually be passed by congress, and yet this plan makes no mention in that eventuality of what that would look like in terms of our long range planning. I would support the state endorsing one of the many bills that have been simmering on the back burners of congress (Such as the Energy Innovation and Carbon Dividend Act, or one like it) to let our politicians know that we mean business and that delays are no longer acceptable.

Thank you for the opportunity to give input.

--

"Education is, quite simply, peace-building by another name. It is the most effective form of defense spending there is." ~ Kofi Annan

"The larger the island of knowledge, the longer the shoreline of wonder.
-- Ralph M. Sockman

“If you are planning for a year, plant rice; if you are planning for a decade, plant trees; if you are planning for a lifetime, educate people.” ~Chinese Proverb

#6-53

From: [redacted]
To: Climate Council
Subject: [EXTERNAL] Support for the Montana Climate Solutions Plan
Date: Saturday, March 21, 2020 10:47:59 AM

Thank you for all your good work in creating the Montana Climate Solutions Plan. I strongly support it, and it needs to be implemented immediately. Climate change is even more of a crises than the Coronavirus, and I say this as an 80 year old with underlying health conditions.

#6-54

From: [redacted]
To: Climate Council
Subject: [EXTERNAL] Public Comment
Date: Saturday, March 21, 2020 5:24:50 PM

Montana's electric cooperatives are proven leaders in reducing greenhouse-gas emissions and in using clean energy sources. Therefore, I do not believe additional government mandates are needed.
Karen Highbarger
Flathead Electric Cooperative Member

#6-55

From: [redacted]
To: Climate Council
Subject: [EXTERNAL] Comments on draft Montana Climate Solutions Plan
Date: Saturday, March 21, 2020 2:09:21 PM

Council Members,

Thank you for your efforts in producing the draft Montana Climate Solutions plan. In addition to the specific comments below, please make it a priority that implementation begin immediately for those measures which can begin right away and that will help reduce greenhouse gas emissions.

-- Please support efforts to expand Montana's ability to understand climate risks and prepare for change. In particular, recommendations 1A through 1H should be funded and acted upon.

-- Montana needs more accessible climate science. Please support a larger Montana Climate Office with more staff, stronger Montana University System climate coordination, research and funding, and increased support from the state to communities so they can develop greenhouse gas reduction and climate adaptation strategies.

-- Recommendations 2A through 2E and 2G through 2K are essential for Montana to reduce greenhouse gas emissions and avoid locking into new fossil fuel infrastructure. Montana is deficient in programs and funding to support energy efficiency and conservation and the key strategies identified, if enacted swiftly and with financial support, are essential. They will save Montanans money while improving public health.

-- A statewide energy efficiency standard would save all Montanans money.

-- Raising the size cap on distributed generation solar systems (aka rooftop solar) would benefit schools, libraries, and other public buildings in their community - saving taxpayer dollars and creating educational opportunities for our youth.

-- Support adoption of low emission vehicle standards and actions that will incentivize/promote/enhance electric vehicles.

-- Please encourage and support community goal setting, energy data collection across sectors, and planning efforts to reduce emissions and save money in local communities.

-- Voluntary controls on oil and gas development are inappropriate. The industry has had decades to voluntarily curb greenhouse gas emissions and has failed to do so. Methane emissions from oil and gas development are easily controlled and should be required. The time has past for voluntary commitments from this greenhouse gas producing sector.

-- Carbon capture and sequestration is not an appropriate climate solution for coal-fired electricity. This unproven technology only makes dirty, expensive coal plants even more expensive and risky. The final recommendations should focus on reducing reliance on coal-fired electricity instead of relying on misguided, expensive, risky, and unproven technology.

Thank you,

--
Rick Whitman
[redacted]
Livingston, MT
[redacted]