Testimony of Matt Fry
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Before the U.S. Senate Committee on Environment and Public Works

September 13, 2017

Mr. Chairman and Members of the Committee,

I appreciate the opportunity to testify before the Committee today. My name is Matt Fry and I serve as a Natural Resource Policy Advisor to Wyoming Governor Matt Mead. I have worked in the natural resource management and planning fields, both public and private sectors, for approximately 20 years. I look forward to relating the challenges and opportunities associated with regulatory processes required for carbon capture, utilization and storage (CCUS) deployment, and specifically carbon dioxide (CO_2) transport and the necessary development of pipeline infrastructure.

Wyoming is heavily dependent upon the development of fossil fuels. Coal, oil, and natural gas are responsible for approximately 65% of our state's revenue. A number of factors in recent years have led to the decline of these industries. As a result, state coffers have shrunk and our citizens find it more and more difficult to obtain stable, profitable employment. While we are not here to debate the merits of climate change, the reality is that regulations to reduce climate impacts have had an effect on Wyoming. In order to address this issue, while preserving our economy, Governor Mead has spearheaded a number of initiatives, with CCUS playing a major role.

The deployment of CCUS technology is of great importance not only to Wyoming, but to the nation as a whole. CCUS provides us with the opportunity to treat CO_2 as a valuable commodity, rather than an end product with no value. However, there are substantial challenges associated with its implementation. These include rigorous and costly regulatory processes, lack of federal and state policies that incentivize CCUS, minimal financial certainty for prospective project developers, and a number of other factors that we may not have time to discuss today. Under the leadership of Governor Mead, we recognize these challenges, and are working diligently to address them head-on. The State of Wyoming does not have all of the answers, but based on our work, I do believe we can present several opportunities to reduce regulatory challenges.

<u>Regulatory Challenges</u>

Development of infrastructure projects requires myriad regulatory review processes and approvals. A typical pipeline project in a single western state, with mixed federal, state, and privately owned lands may require upwards of 30 reviews, permits, and approvals from federal, state, and local authorities. If a proposed project were to cross multiple states, this number would increase accordingly. While the combination of these regulatory reviews is onerous, they are all required by various laws and regulations.

Many of these regulatory processes are not difficult to complete, but some are tremendously rigorous. Without question, the most costly and time consuming of these regulatory processes is the one dictated by the National Environmental Policy Act (NEPA). NEPA analyses historically were completed in relatively short timeframes and at acceptable costs. Unfortunately, in recent years, they have evolved in such a way that they may now take upwards of a decade and tens of millions of dollars to complete. From a project proponent's perspective, this drawn out process creates a number of problems. One of the most significant challenges is commodity price instability. Markets are dynamic, which means a proponent may propose a pipeline project at a particular commodity price and as the NEPA process proceeds, that price may change drastically. This adversely affects the original economics and potentially undermines the viability of projects, including CO_2 pipelines and projects that reduce carbon emissions and provide additional environmental benefits.

As an example, Denbury Resources submitted a right-of-way (ROW) application for the Riley Ridge to Natrona Pipeline project in February 2013. This project is intended to transport CO_2 from a source in western Wyoming to an interconnect facility in central Wyoming, for the purposes of use in enhanced oil recovery (EOR). At the time of their application, oil prices were approximately $105/barrel. After 4 ½ years of NEPA review, and with a current oil price of roughly $45/barrel, the Draft Environmental Impact Statement (EIS) has not yet been released for public comment. While there are a number of reasons for this, the reality is that this timeline has significantly delayed implementation of this project at significant cost to the project proponent, and the state and federal governments that stand to benefit from anticipated revenues from taxes and oil royalties.

Regulatory Solutions

I am not here this morning to suggest that NEPA be abolished, or even significantly amended. As you are aware, the National Environmental Policy Act of 1969 was enacted to fulfill a specific set of purposes, as described below:

- *Sec. 2 [42 USC § 4321]. The purposes of this Act are: To declare a national policy which will encourage productive and enjoyable harmony between man and his environment; to promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man; to enrich the understanding of the ecological systems and natural resources important to the Nation; and to establish a Council on Environmental Quality.*

To fulfill its purposes, NEPA is meant to function merely as a procedural law, which requires that impacts of a proposed action, and alternative actions, be disclosed for the purposes of informing a decision. This fundamental basis of the law has eroded, which has led to NEPA being utilized in a prescriptive manner and to a large extent it has become a tool to either defend or inform litigation. I suggest that we take a step back and look at the enabling legislation that created NEPA and return the process to its original intent. I do not believe that we need to reinvent the wheel, rather I think we just need to make it round again. While this recommendation sounds simplistic, the reality is that it will require a significant paradigm shift as well as cultural changes. Reversing the inertia of NEPA's current course will require

significant leadership, and I submit that this committee is eminently qualified to undertake and accomplish this goal.

Additionally, I suggest a foundational change to the NEPA process, which could either be achieved by legislative action, or through informal agency actions (e.g. manual updates, internal memoranda, etc.). NEPA requires a specific sequence of actions in order to reach a final decision. This process is initiated by a Notice of Intent and Scoping, then the Draft EIS is released for public comments. After comment review and edits, agencies release the Final EIS, and finally the Record of Decision and Agency Action. It has been my experience that far too many resources are devoted to these steps and not nearly enough work is done on the front end of projects in order to build a strong base. To illustrate my point, none of us want to live in a house that was built on a weak, structurally deficient foundation. This inevitably leads to schedule delays and increased costs on the back end. The same can be said for the NEPA process and the resulting environmental analysis.

There are a number of agency activities that occur behind the scenes to prepare for the NEPA process, one of which is "internal scoping". This is where agency personnel work together internally to gather data, develop schedules, and generally inform themselves of the project similar to how the public informs the process during public scoping. Unfortunately, federal agencies do not effectively reach out to other entities that are often times much more knowledgeable and may have far greater insight into potential constraints that inevitably lead to delays. There are limitations to how this outreach can occur, which are dictated by federal law, however, adding this step on the front end will undoubtedly reduce the time and resources required to reach a decision.

In Wyoming, we are actively developing a project that exemplifies this effort to build a strong foundation in order to minimize future analysis requirements. Similar to the previously mentioned example, we have witnessed a substantial number of projects that have been delayed by NEPA. As CO_2 regulations, oil prices, and our knowledge of EOR potential in Wyoming increased we decided that it would be tremendously beneficial to our economy, the companies that choose to operate within our state, and our potential to manage carbon emissions to develop what we call the Wyoming Pipeline Corridor Initiative (WPCI). While formalizing this project proposal, we have coordinated with industry; local, state, and federal agencies; non-governmental organizations; individuals that have intimate knowledge of lands within our borders; and other authorities with experience in the CO_2-EOR industry and its associated infrastructure demands.

Wyoming Pipeline Corridor Initiative

WPCI is a sound strategy to streamline the NEPA process for pipeline infrastructure, without compromising the integrity of the Act or its process. The WPCI is a component of Governor Mead's energy strategy for the State of Wyoming (http://energy.wyo.gov) and it is our goal to obtain federal authorization for an intrastate pipeline network (see attached). One of the primary purposes of the pipeline network is to connect existing oil fields suitable for EOR with CO_2 sources. The CO_2 will be injected into existing, often "played-out" oil fields, thereby increasing oil production beyond conventional recovery methods with little additional surface disturbance

while ensuring safe and permanent geologic storage of CO_2 in the process. Once we complete our EIS and the authorization is approved, companies will be able to build their infrastructure within the corridors in reduced time and at reduced costs, as we will have already dedicated our resources to completing the bulk of the NEPA analysis. Additionally, we hope to solve the ever present question associated with CO_2-EOR, which is who expends resources first -- the developers of capture facilities or those who develop pipeline infrastructure. In this case it will be the State of Wyoming laying the groundwork for pipeline infrastructure.

We have designed WPCI as a pipeline corridor network of 25 segments, approximately 1,983 miles in length, and wholly within the State of Wyoming. Approximately 1,150 miles (58%) of the network is expected to be located on Federal Lands, with 708 miles (62% of the federal land mileage) located in corridors designated or proposed in Bureau of Land Management (BLM) Resource Management Plans (RMP). Over 90 percent of WPCI parallels existing pipelines. The Right of Way (ROW) widths will vary between 200 – 300 feet and be sufficient to accommodate a number of pipelines of varying types.

Some of the benefits that will result from WPCI are:

- An estimated 500 existing oil reservoirs in Wyoming are potential EOR candidates with an estimated production of up to 1.8 billion barrels of oil, based on current technologies. Additionally, 20 trillion cubic feet of CO_2 could be stored as a result of this enhanced development.
- The WPCI will provide a large number of jobs for those building, maintaining, and operating pipelines and EOR fields. These jobs would likely be in Wyoming communities which have recently experienced significant declines in energy-related employment. The University of Wyoming, School of Energy Resources, estimates that 188 jobs are supported for every million barrels of incremental oil production, or 6.7 jobs per million cubic feet/day of purchased CO_2.
- Additional production of oil, gas, and liquids from EOR will generate significant royalties and taxes for federal, state, and local governments.
- The WPCI provides a balanced approach of natural resource utilization and environmental conservation.
- Performing the environmental analysis for the WPCI will alleviate many of the challenges associated with conducting environmental analyses for individual pipeline projects, which is currently a significant barrier to infrastructure expansion. Individual projects proposed in the WPCI corridors will undergo environmental analysis, but in a shortened timeframe and at reduced costs to proponents, due to the robust NEPA analysis that will be completed to authorize WPCI.
- The WPCI will be located almost entirely within existing ROW corridors, designated in BLM RMPs and/or adjacent to existing pipeline infrastructure. This will minimize the proliferation of linear disturbances; and reduce impacts to wildlife and their habitats, culturally significant properties, and other sensitive resources.

- A sufficiently wide ROW corridor will provide for future location of product pipelines (oil, gas, liquids, etc.) with minimal additional environmental analysis needed and encourage colocation of new pipelines.
- EOR will occur primarily in established oil fields in Wyoming which have historical disturbance, extending the field's life and providing an opportunity to improve its reclamation status at the end of its productive life.

To date, we have worked on baseline development of WPCI for approximately 4 years. We have produced and allowed stakeholder review of corridor mapping, a Plan of Development, and baseline impact analyses. We are now anxiously awaiting the approval from the Bureau of Land Management (BLM) to begin the NEPA process. Once finalized, WPCI will be a model that can be followed by any states interested in streamlining NEPA work.

CO_2 – EOR Working Group

In addition to the work outlined previously, Governor Mead has sponsored or co-sponsored several additional initiatives for the support of CCUS and CO_2-EOR. In 2015, Governor Mead and Montana Governor Bullock, acting as Chair and Vice-Chair of the Western Governors' Association, released a Policy Resolution for Enhanced Oil Recovery (see attached). As a result of that resolution, and the interest it received, they subsequently co-convened a multi-state, CO_2-EOR Working Group. Our Working Group is comprised of 14 states, and growing, with bipartisan leadership and we are working toward development of policies that incentivize deployment of CCUS technologies.

To date, we have released three reports that describe potential carbon capture incentives, recommendations to streamline and finance pipeline development, and potential opportunities to address market and grid challenges associated with CCUS. Links to these reports are provided below:

- *Putting the Puzzle Together: State and Federal Policy Drivers for Growing America's Carbon Capture and CO_2-EOR Industry* http://www.betterenergy.org/EORpolicy

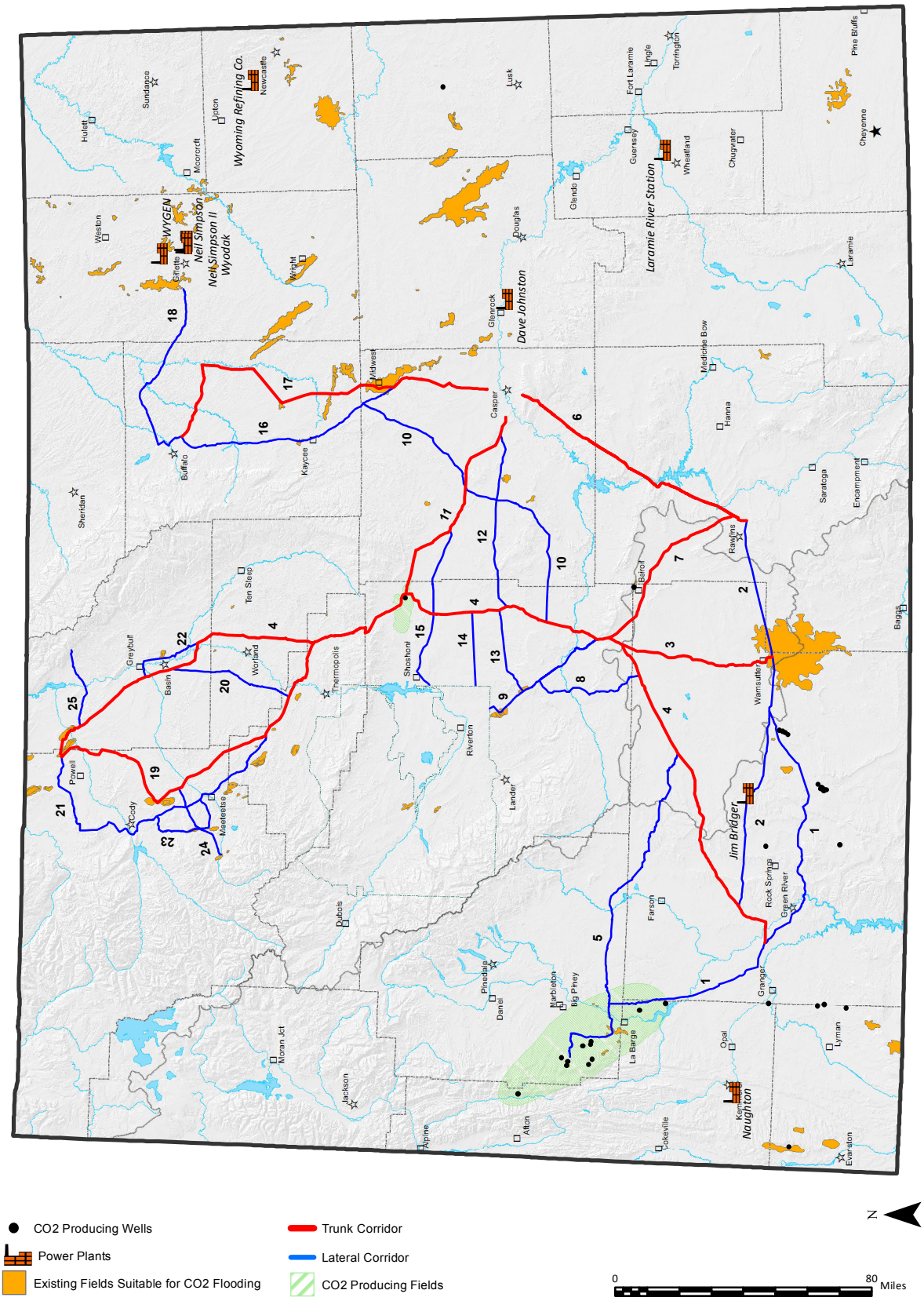
- 21st Century Energy Infrastructure: Policy Recommendations for American CO_2 Pipeline Networks http://www.betterenergy.org/American_CO2_Pipeline_Infrastructure

- *Electricity Market Design and Carbon Capture Technology: The Opportunities and the Challenges* http://www.betterenergy.org/publications/electricity-market-design-and-carbon-capture-technology

Finally, we have supported legislative efforts to further deploy CCUS technology. We believe that legislation to extend and improve 45Q tax credits is essential for further deployment of the carbon capture industry. These tax credits will further bolster deployment, by providing added financial certainty that currently does not exist. The resulting symbiotic relationship of

regulatory and financial certainty will in the end lead to our desired results of continued development of fossil fuels, with added storage of CO_2, and more stable and diverse economies.

Once again, I appreciate the opportunity to present this testimony today, and I am happy to answer any questions. Thank you.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Kemmerer
La Barge
Big Piney
Marbleton
Pinedale
Daniel
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Cokeville
Evanston
Opal
Lyman
Granger
Green River
Rock Springs
Farson
Dubois
Riverton
Lander
Shoshoni
Thermopolis
Worland
Basin
Greybull
Ten Sleep
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Cody
Powell
Sheridan
Buffalo
Kaycee
Midwest
Casper
Douglas
Glenrock
Medicine Bow
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Pine Bluffs
Torrington
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Fort Laramie
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Western Governors' Association
Policy Resolution 2015-06

Enhanced Oil Recovery

A. BACKGROUND

1. Enhanced oil recovery (EOR), using carbon dioxide (CO_2), when performed appropriately and responsibly offers a safe and commercially proven method of domestic oil production. The U.S. oil and gas industry, which pioneered the CO_2 EOR process in West Texas in 1972, is the world leader. Over four decades, the EOR industry has captured, transported, and injected large volumes of CO_2 for oil recovery with no major accidents, serious injuries or fatalities reported.

2. The CO_2 EOR process works by injecting CO_2 obtained from natural and anthropogenic sources into existing oil fields – often referred to as "brownfields" – to free up additional crude trapped in rock formations. This CO_2 "flooding" can result in recovery of about twenty percent of the original oil in place.[1] CO_2 flooding utilizes existing assets to recover significant additional resources stimulating the economy and minimizing surface disturbance that new exploration and development projects necessarily entail. In addition, many areas favorable for CO_2 application exist where new or continued significant drilling activity is unlikely to occur at a meaningful scale for years, if ever.

3. As of 2013, EOR using CO_2 produced approximately 280,000 barrels of domestic oil per day, or four percent of U.S. crude oil production.[2]

4. America has an estimated 21.4 billion barrels of oil, requiring 8.9 billion metric tons of CO_2, that could be economically recovered with today's EOR technologies. With advances in technology, 63.3 billion barrels of oil, requiring 16.2 billion metric tons of CO2, could be economically recovered, which is roughly double current U.S. proven reserves[3].

5. EOR enhances our nation's energy and fiscal security by reducing dependence on foreign oil, often imported from unstable and hostile regimes. It allows reduction of our trade deficit by keeping dollars now spent on oil imports here at home and at work in the U.S. economy.

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[1] National Energy Technology Laboratory – *Untapped Domestic Energy Supply and Long Term Carbon Storage Solution*
[2] Energy Information Administration – Annual Energy Outlook 2015
[3] U.S. Department of Energy, National Energy Technology Laboratory

6. Coal and oil production and utilization and other industrial processes are a vital component of many western states' economies. EOR provides a long-term path for continued low-carbon production and use of our nation's coal and oil resources and presents an opportunity for state and local governments to stimulate economic activity and realize additional revenue at a time when most governments face significant fiscal challenges.

7. CO_2 is currently limited in availability from high-volume sources needed for EOR – natural sources will not close a supply gap projected to grow. Further, CO_2 capture and pipeline transport capacity to oil fields is not sufficient.

8. CO_2 capture equipment, installed on a broad range of industrial processes, has the potential to supply significant volumes of CO_2 to the EOR industry enabling the U.S. to achieve significant net carbon reductions through the sequestration of CO_2.[4]

9. The U.S. has the opportunity to provide global leadership in carbon capture research and technology development, hydrocarbon recovery and geologic storage research and technologies, manufacturing, engineering and other services.

B. GOVERNORS' POLICY STATEMENT

1. In recognition of the environmental and economic benefits of EOR, Western Governors support policies and incentives that advance investment in EOR projects, infrastructure, technology and research.

2. Western Governors support efforts to increase the awareness of the many benefits CO_2 EOR.

3. In order to expand deployment of CO_2 capture at power plants and other industrial sources, the President and Congress should enact federal incentives to increase CO_2 supply available for the oil industry to purchase and use in EOR. Federal incentives have the potential to leverage private and state investment, harness the ingenuity of entrepreneurs and capitalize on billions of dollars' worth of DOE-sponsored research and development to enable new commercial carbon capture and pipeline projects.

[4] As of 2014, approximately 13.6 million metric tons of CO2 was captured that would otherwise be released into the atmosphere has been sequestered as a result of EOR (U.S. Department of Energy – Quadrennial Energy Review). Over the life of a project, for every 2.5 barrels of oil produced, it is estimated that a typical commercial EOR project can safely prevent one metric ton of CO_2 from entering the atmosphere (Kuuskraa, Godec, Dipietro – Energy Procedia). Further, the volume that could be captured and sequestered from industrial facilities and power plants to support economically recoverable EOR reserves could be 8.9 to 16.2 billion metric tons of CO_2. This is equal to the total U.S. CO_2 production from fossil fuel electricity generation for approximately 4 to 8 years (EPA 2015 Green House Gas Inventory).

4. Federal policies aimed to limit CO_2 emissions should promote, and not impede, development and deployment of CO_2 capture and commoditization. Federal regulations should allow states to create programs tailored to individual state needs, industries and economies and recognize CO_2 sequestration that results from EOR in meeting federal regulatory objectives. As such, EPA should abide by principles already established by the Agency in its regulations promulgated to ensure the long-term storage of CO_2 in different geologic formations.

C. GOVERNORS' MANAGEMENT DIRECTIVE

1. The Governors direct the WGA staff, where appropriate, to work with EPA and other federal agencies, Congressional committees of jurisdiction, and the Executive Branch to achieve the objectives of this resolution including funding, subject to the appropriation process, based on a prioritization of needs.

2. Additionally the Governors direct the WGA staff to develop, as appropriate and timely, detailed annual work plans to advance the policy positions and goals contained in this resolution. Those work plans shall be presented to, and approved by, Western Governors prior to implementation. WGA staff shall keep the Governors informed, on a regular basis, of their progress in implementing approved annual work plans.

Western Governors enact new policy resolutions and amend existing resolutions on a bi-annual basis. Please consult westgov.org/policies for the most current copy of a resolution and a list of all current WGA policy resolutions.