

Overview of a Possible New Federal Clean Electricity Standard: The View from Wyoming

Center for Energy Regulation & Policy Analysis

UW School of Energy Resources
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THE WORLD NEEDS MORE COWBOYS.

Clean Energy Innovation and Deployment Act

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Objective -- to resolve the following conundrum:

- Americans demand and deserve affordable reliable electricity.
- To avoid the worst consequences of global warming, we must eliminate net global greenhouse gas emissions as quickly as technologically feasible.
- We don't yet have the technologies to generate affordable reliable zero-emission electricity.

Clean energy standards are included in:

- **Clean Energy Innovation and Deployment Act**
 - Rep. DeGette (D-CO)
- **CLEAN Future Act**
 - Rep. Pallone (D-NJ)
- **Clean Energy Future Through Innovation Act**
 - Reps. McKinley (R-WV), Schrader (D-OR)

DeGette Clean Energy Innovation and Deployment Act:

- Title I: Investment in Clean Energy Technology Innovation
- Title II: Zero-Emission Electricity Standard
- Title III: Incentives for 100% Zero-Emission Electricity
- Title IV: Low-Income Rate-Payer Protection
- Title V: Energy Workforce Transition and Training

DeGette Zero-Emission Electricity Standard:

- Generators issued “Zero-emission Electricity Credits”
- Retail Electricity Suppliers submit ZECs
- RES’s can buy ZECs from any generator
- In 2023 and 2024, each RES submits ZECs to cover current level of zero-emission electricity – “soft start”
- ZEC requirement grows to cover 100% of electricity by between 2035 and 2050, depending on availability of technology

What counts as “zero-emission electricity”?

- Each MWh from wind, solar, geothermal, hydro & nuclear issued a whole Zero-Emission Electricity Credit
- Coal and natural gas eligible for at least partial credit based on:
 - Direct carbon emissions if lower than a coal plant, whether through natural gas or carbon capture, utilization and storage (CCUS); and
 - Upstream methane and carbon released in extracting, processing, and transporting the fuel

Three speeds of clean energy deployment

- Speed depends on pace of innovation, as indicated by ZEC price
- 1st speed: Net-zero by 2050
- 2nd speed: 100% zero-emission electricity as soon as 2035
- 3rd speed: Incentives to replace emitting technologies now

1st speed – technology innovation is slow: Net-zero by 2050

- If technology doesn't keep up, ZEC prices spike
- Instead of submitting ZECs, RES's pay Alternative Compliance Payment
- ACP funds used to pay for the most cost-effective offsets, e.g. vehicle and building electrification, forest carbon, ag soil carbon

2nd speed -- technology innovation fast: 100% as soon as 2035

- If technology innovation goes fast, ZEC prices fall
- If ZEC prices low three years in a row or more, date of 100% moves forward
- If ZEC prices low year-after-year from 2023, 100% zero-emission electricity by 2035

3rd speed – technology here now: incentives to deploy now

- Any generator prepared to replace all carbon-emitting units with zero-emission units before 2035 receives tax credits or grants to help pay the cost

Recap -- the DeGette bill and nuclear and CCUS:

- Tax credit for installation of nuclear and CCUS that replaces emitting generation.
- 1 ZEC for every MWh of nuclear generation.
- At least partial ZEC for fossil fuel generation with CCUS, as long as limiting upstream methane waste.
- I.e., PacifiCorp reactor demonstration project would get tax credit and full ZEC credit.
- Dry Fork, Project Tundra (ND), Prairie State (IL) and other coal generation with CCUS would get tax credit and be eligible for at least partial ZEC credit.

Summary -- DeGette Clean Energy Innovation & Deployment Act:

- Deploys affordable reliable zero-emission electricity as soon as technologically feasible
- Protects low-income rate payers
- Assists workers in transition
- Supports US innovation in technology with a global market

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CLEAN ENERGY STANDARD IN WYOMING



HOW WOULD A CES IMPACT WYOMING?

- CES APPLICABILITY IN WYOMING
 - ❖ What entities does a CES apply to?
 - ❖ How does the CES define “clean”?

- CES INTERACTION WITH WYOMING STATE LAW

- CES APPLICATION IN TRADITIONALLY REGULATED RETAIL MARKETS

➤ CES APPLICABILITY IN WYOMING

❖ What Entities Does a Clean Electricity Standard Apply To?

○ CEIDA

- “retail electricity suppliers” [Sec. 202. (a)(1)(A)]
- “an entity in the United States that sold not fewer than 20 megawatt-hours of electric energy to electric consumers for purposes other than resale during the preceding calendar year.” [Sec. 201. (18)]

○ **Applicability to Wyoming**

- Utility companies selling > 20 MWh electricity required to demonstrate % of electricity sales from zero carbon electricity

➤ CES APPLICABILITY IN WYOMING

❖ How Does the CES Define “Clean”?

- CEIDA
 - Full credit for zero-emission electricity:
 - Solar, wind, geothermal, hydro, other renewables, and nuclear
 - Partial credit or greater for fossil-based generation:
 - Based on extent carbon emissions are less than that of a coal plant (CCUS used) and considering upstream methane wastes
- **Applicability to Wyoming**
 - All of the above CES, like CEIDA, that include CCUS and nuclear along with renewables is favorable for states like Wyoming that are dedicated to energy production & innovation

➤ CES APPLICABILITY IN WYOMING

Recent Legislative Actions

WS § 34-1-152 Pore space ownership

WS § 35-11-313 Permitting for CCUS

WS § 35-11-318 MRV for CCUS

WS § 35-11-315 Unitization/ pooling CCUS

WS § 34-1-153 Liability for GS

WS § 30-5-501 Production rights > storage, but cannot interfere

WS § 30-5-502 Certification process for CO₂ EOR

WS § 37-2-133 & WS § 37-3-116 Process for sale of otherwise retiring coal facility

WS § 37-5-502 Establish WY Energy Authority

WS § 37-3-117 Limits recovery of costs associated with retiring coal assets

WS § 35-11-2100 Authorizes permitting small nuclear reactors at retiring coal facilities

WS § 37-18-101-102 Requires PSC establish electricity portfolio standards requiring % of each utility's generation from "dispatchable", "reliable", "low-carbon" sources using CCUS [rulemaking underway]

HB 0166 Requires public utilities - before retiring coal or natural gas plants - demonstrate retirements will not lead to added costs to ratepayers or less reliable electrical service

SF43 WEA amendments; encourage development of rare earth elements

HB 0030/ WS § 37-2-133 Creates conditions for exception, for coal-fired generation facilities that would otherwise have been retired

➤ CES APPLICABILITY IN WYOMING

Recent Utility Actions

Federal Grant Advances Co-op's Carbon Storage Project in Wyoming

Published
May 4, 2020

Author
Derrill Holly

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Carbon Capture and Storage,
Co-op News, Coal,
Department of Energy

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Basin Electric's Dry Fork Station is near a site being developed for a carbon storage project that could eventually hold 50 million tons of CO₂. (Photo By: BEPC)

Source: <https://www.electric.coop/doe-grant-advances-wyoming-co-ops-carbon-capture-project>



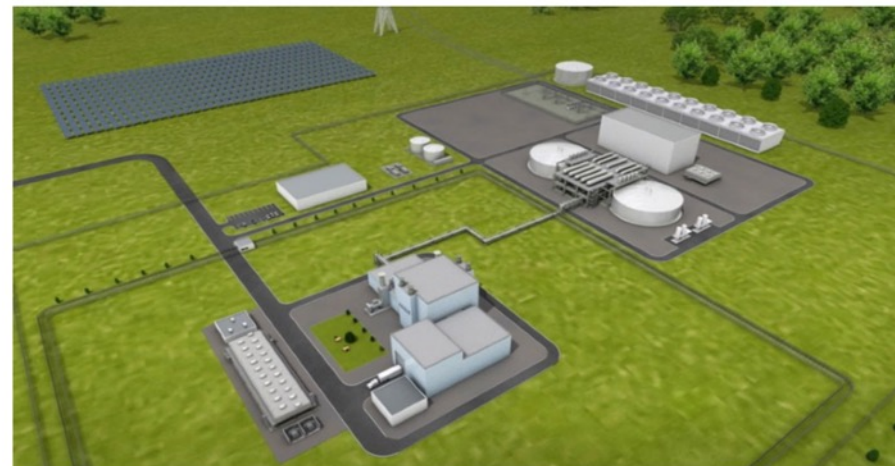
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Pilot Natrium plant to be built in Wyoming

03 June 2021



Plans to construct a Natrium reactor demonstration project at a retiring coal plant in the US state of Wyoming were announced yesterday by TerraPower, PacifiCorp and Wyoming Governor Mark Gordon. The companies are evaluating several potential locations in the state for the plant, which will feature a 345 MWe sodium-cooled fast reactor combined with a molten salt energy storage system that can boost the system's output to 500 MWe for more than five-and-a-half hours when needed. They expect to announce the selected site by the end of 2021.



How a Natrium plant may appear (Image: TerraPower)

TerraPower – a company largely funded by Microsoft founder Bill Gates – and GE Hitachi Nuclear Energy (GEH) announced the launch of the Natrium concept in September 2020. The partners hope to commercialise the technology by the end of this decade.

Source: <https://world-nuclear-news.org/Articles/Pilot-Natrium-plant-to-be-built-in-Wyoming>

➤ CES INTERACTION WITH WYOMING STATE LAW

❖ Coexistence or Preemption?

- CEIDA: “. . . nothing in this title affects the authority of a State or a political subdivision of a State to adopt or enforce any law or regulation relating to—
clean energy or renewable energy;
the regulation of a retail electricity supplier; or
greenhouse gas emissions reduction.” [Sec. 206. (a)(1)]
- Preemption:
 - Danger of preemption: Reduced state autonomy
 - Benefit of preemption: Avoids patchwork state programs

❖ Applicability to Wyoming

- No preemption of Wyoming’s existing laws
- Consultation required to ensure coordination of CEIDA and WS 37-18-101-102
- If Wyoming develops clean electricity standard consultation required to become “qualified state” under CEIDA

➤ CES APPLICATION IN TRADITIONALLY REGULATED RETAIL MARKETS

- ❖ **Regulated Retail Markets** - Vertically integrated electric utilities that own G, D, T, so they sell power to retail customers
 - Utility accrues credits for its generation
 - Utility may purchase/ sell credits
 - Utilities use least cost method to guide actions
- ❖ **Competitive Retail Markets** - Not vertically integrated; electric utilities buy power from competitive generators and sell it to retail customers
 - Utility purchases all credits from market because owns no generation assets

QUESTIONS?



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