



Implementing ACE in Minnesota

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The Plan for Today

- Climate Change Response Action in Minnesota
- Summary of 111(d) plans and the ACE Rule
- ACE in Minnesota
- Compliance options and timeframe for implementation
- How to participate in plan development

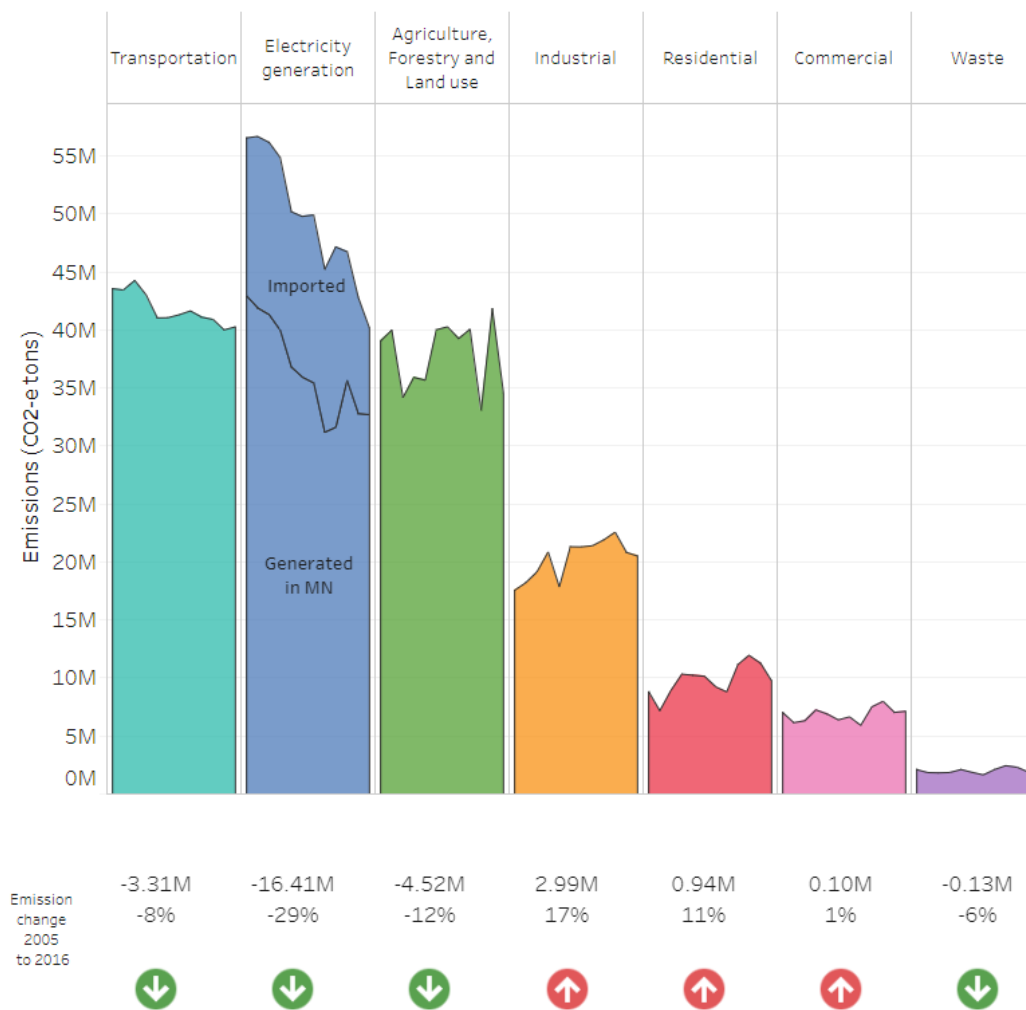
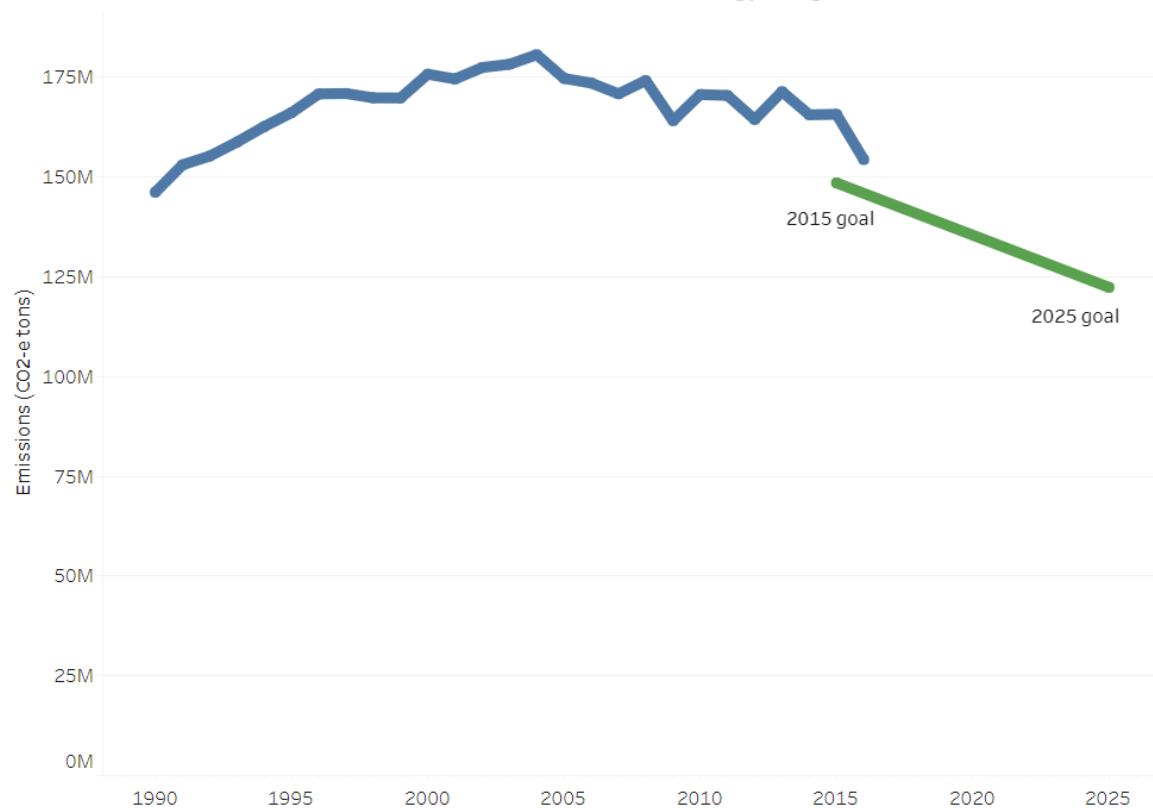
Next Generation Energy Act of 2007

- Minn. Stat. § 216H.02
- Requires progressive reductions in GHG emissions (from 2005 levels):
 - 15% reduction by 2015
 - 30% reduction by 2025
 - 80% reduction by 2050



Next Generation Act GHG Reduction Goals

Minnesota's GHG emissions 1990-2016 and Next Generation Energy Act goals



MN Gov Walz creates Climate Subcabinet



Climate Change Subcabinet

- Establish a Climate Change Subcabinet to
 - Identify policies and strategies to put MN back on track to meet Next Gen goals;
 - Identify policies and strategies to enhance MN resiliency
- Establish an Advisory Council on Climate Change to advise the Subcabinet.
- The MPCA provides staffing and administrative support to the Subcabinet.

Subpart Ba—Adoption and Submittal of State Plans for Designated Facilities

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SOURCE: 84 FR 32575, July 8, 2019, unless otherwise noted.

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§60.20a Applicability.

(a) The provisions of this subpart apply upon publication of a final emission guideline under §60.22a(a) if implementation of such final guideline is ongoing as of f or if the final guideline is published after July 8, 2019.

(1) Each emission guideline promulgated under this part is subject to the requirements of this subpart, except that each emission guideline may include specific provisions in addition to or that supersede requirements of this subpart. Each emission guideline must identify explicitly any provision of this subpart that is superseded.

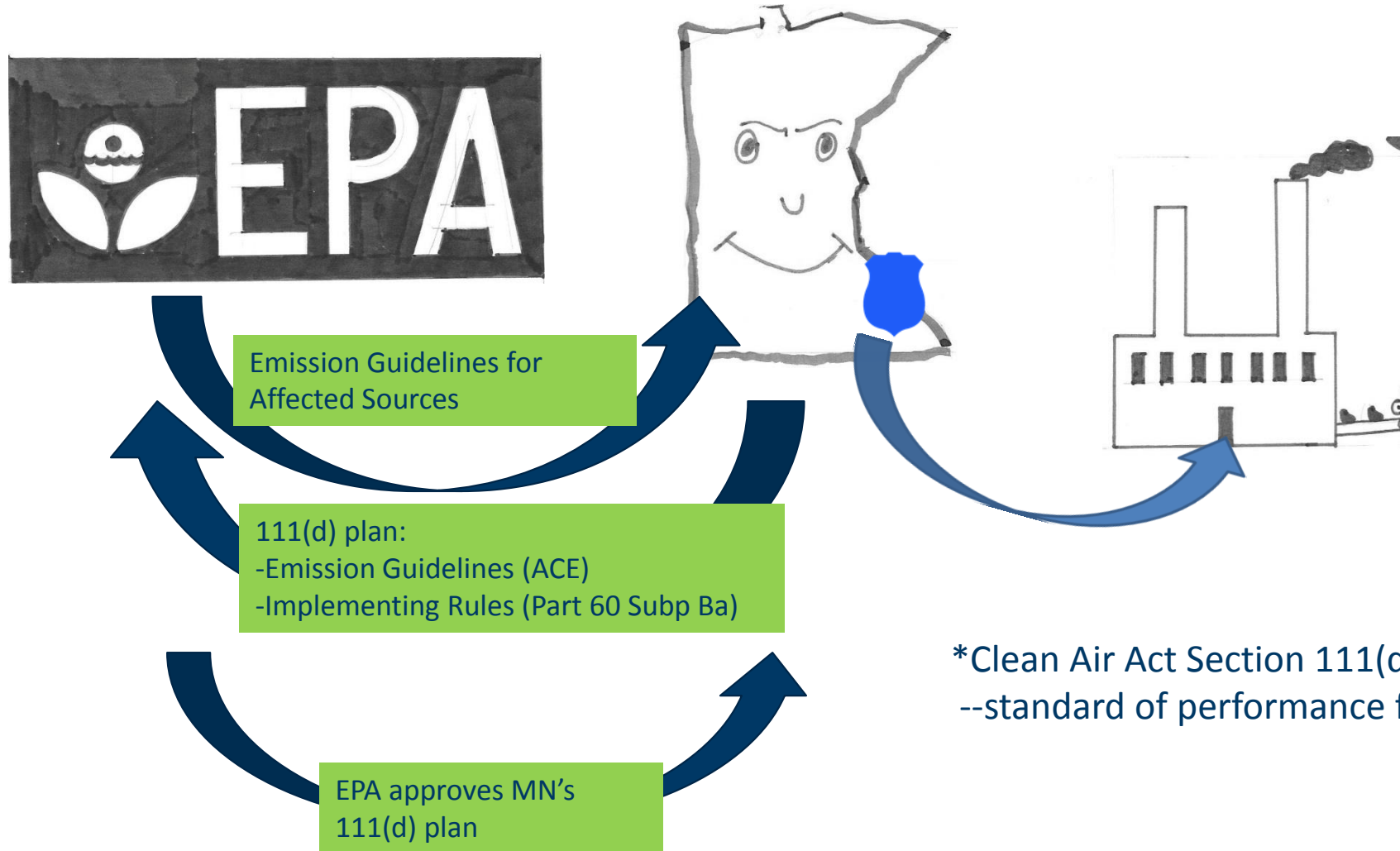
(2) Terms used throughout this part are defined in §60.21a or in the Clean Air Act (Act) as amended in 1990, except that emission guidelines promulgated as individual subparts of this part may include specific definitions in addition to or that supersede definitions in §60.21a.

(b) No standard of performance or other requirement established under this part shall be interpreted, construed, or applied to diminish or replace the requirements of a more stringent emission limitation or other applicable requirement established by the Administrator pursuant to other authority of the Act (section 112, Part C or D, or any other authority of this Act), or a standard issued under State authority.

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111(d) Plans and the ACE Rule

ACE is an Emission Guideline*



*Clean Air Act Section 111(d)
--standard of performance for *existing* sources

ACE replaces the Clean Power Plan

	ACE (40 CFR Part 60 Subp. UUUUa)	CPP
CO2 Emission Reduction	Approx. 8.9% reduction from no policy baseline	35% from 2005 levels 19% from BAU
Affected Units	Coal	Coal and Nat Gas Combined Cycle
BSER	Technologies that apply only within fenceline—Heat Rate Improvements (HRI)	HRI, fuel-switching, fuel co-firing, unit or facility averaging, add-on controls, emissions trading
Emission Limits	Not set in rule EPA says use HRI to comply. States develop rate-based CO2 limit.	Rate-based (Lb/MWh) or Mass-based (TPY) set in rule States and Utilities figure out how to comply

HRI Measure	< 200 MW		200-500 MW		>500 MW	
	Min	Max	Min	Max	Min	Max
Neural Network/Intelligent Sootblowers	0.5	1.4	0.3	1.0	0.3	0.9
Boiler Feed Pumps	0.2	0.5	0.2	0.5	0.2	0.5
Air Heater & Duct Leakage Control	0.1	0.4	0.1	0.4	0.1	0.4
Variable Frequency Drives	0.2	0.9	0.2	1.0	0.2	1.0
Blade Path Upgrade (Steam Turbine)	0.9	2.7	1.0	2.9	1.0	2.9
Redesign/Replace Economizer	0.5	0.9	0.5	1.0	0.5	1.0
Improved Operating and Maintenance Practices	Can range from 0 to > 2.0% depending on the unit's historical O&M practices					

Heat Rate Improvement Measures

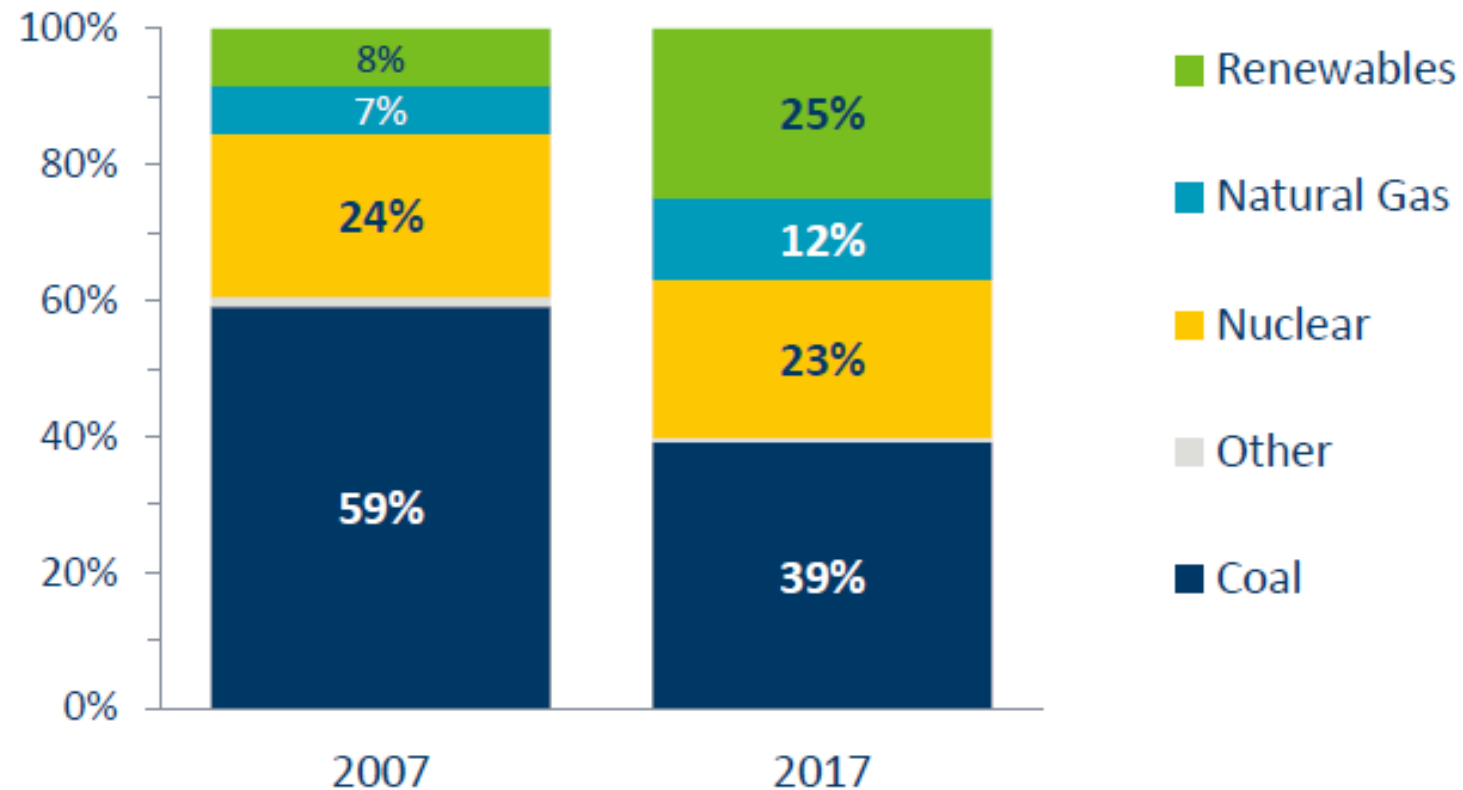
ACE in Minnesota



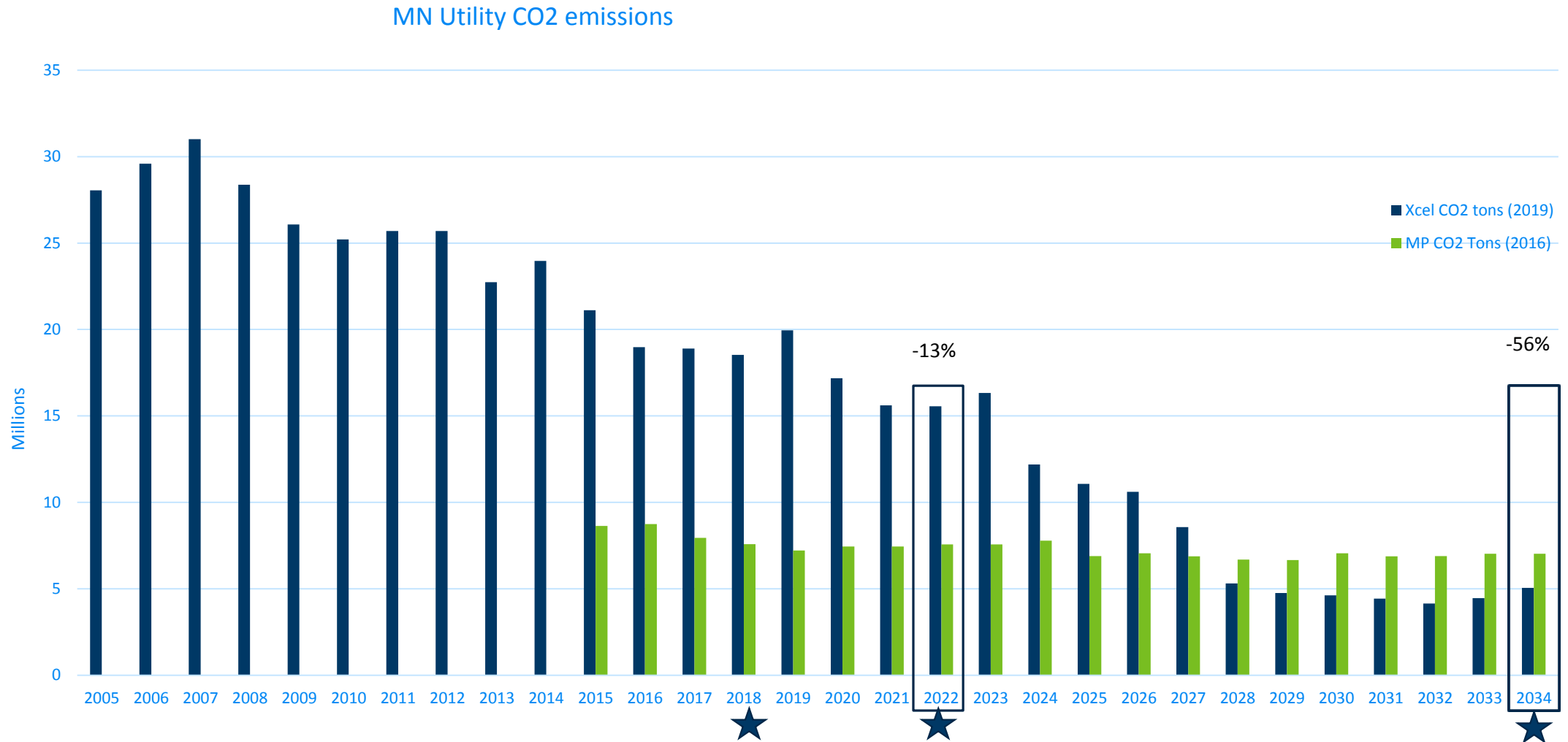
Facility	Size	Retirement Date
Minnesota Power		
Boswell Energy Center 3	390 MW	No retirement date
Boswell Energy Center 4	640MW	No retirement date
Taconite Harbor Energy Center unit 2	76 MW	2020 – no coal
Taconite Harbor Energy Center unit 3	83 MW	2020 – no coal
Xcel Energy		
Sherburne County 1	680 MW	2026
Sherburne County 2	682 MW	2023
Sherburne County 3	900 MW	2030--proposed
Allen S. King	510 MW	2028--proposed

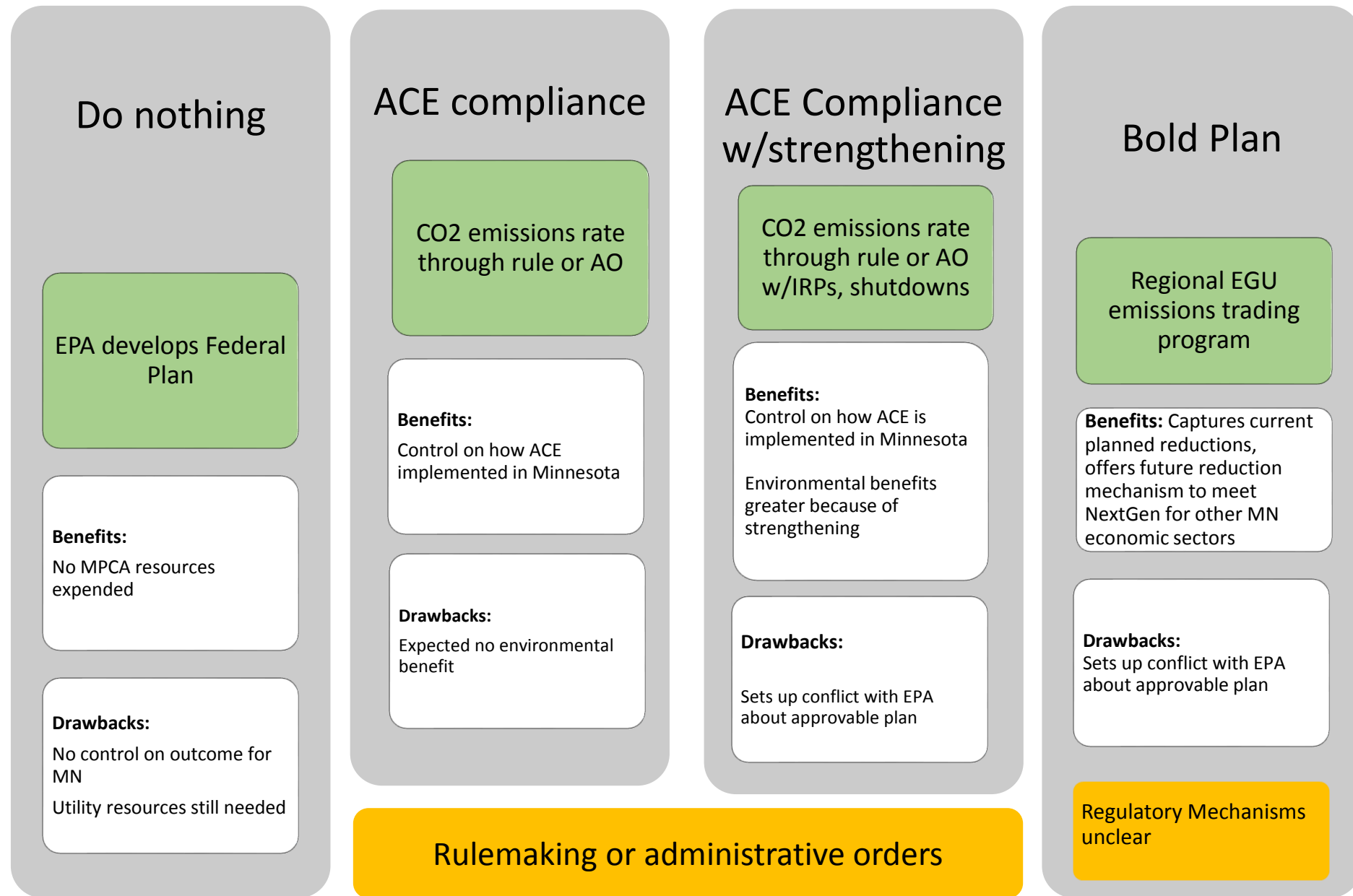
Electricity generation by fuel type

Minnesota's Electricity Generation Mix
(% Megawatthours, source: U.S. EIA)



MN Utility System CO2 emissions—Planned reductions are greater than what ACE requires





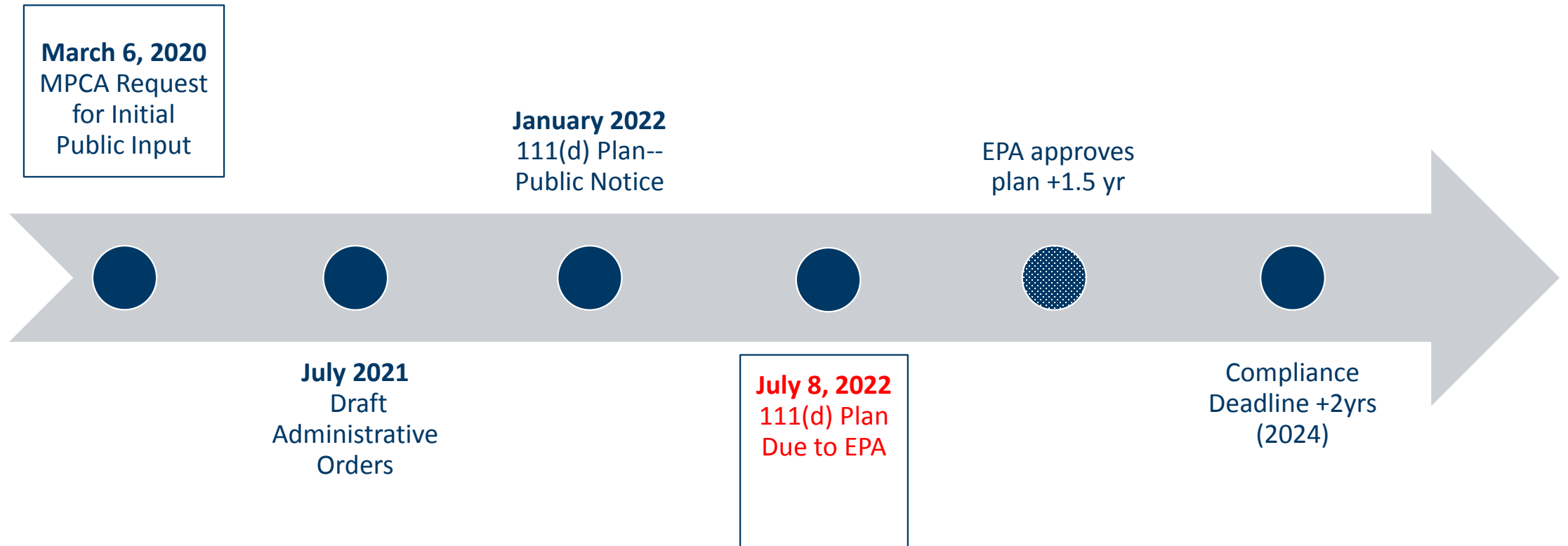
Potential Strengthening Measures

- Could include in MN's regulatory vehicle:
 - Mass emission limits
 - System wide emission limits
 - Fuel-switching, generation shifting
 - Facility closures
 - Current Integrated Resource Planning
 - Other?
- Modeled on Minnesota's Regional Haze SIP
- A strengthened ACE plan could incorporate planned CO2 reductions, or result in greater reductions.

Tasks and decisions

- Develop HRI assessment
 - Technical assessment
 - Cost evaluation
 - Initial Request for Information sent to utilities January 2020
- Evaluate the form of a standard
 - ACE requires:
 - emission limit for each unit
 - an emissions rate: CO₂ lb/MWh
- Identify administrative vehicles to create enforceable conditions
 - Administrative Order—Minn. Stat. 116.07, subp. 9

Timeline of actions



Public Input by March 6, 2020

- Which of the four 111(d) plan options do you prefer and why?
- Do you see a reason for the MPCA to conduct rulemaking instead of using administrative orders to develop enforceable emission limits?
- What are your thoughts on ongoing public engagement for this rule? Would technical stakeholder meetings or webinars be useful? If so, what topics should we address? What frequency and what kind of information/detail would be appropriate?
- Given the other processes influencing power sector GHG emissions, how important is the ACE rule to your organization?
- Email MPCA.ACErule@state.mn.us by March 6, 2020

Thank you!

