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AEPCO Resource Plans and the Impending Clean Power Plan

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AzGT Cooperative's Organization and Membership

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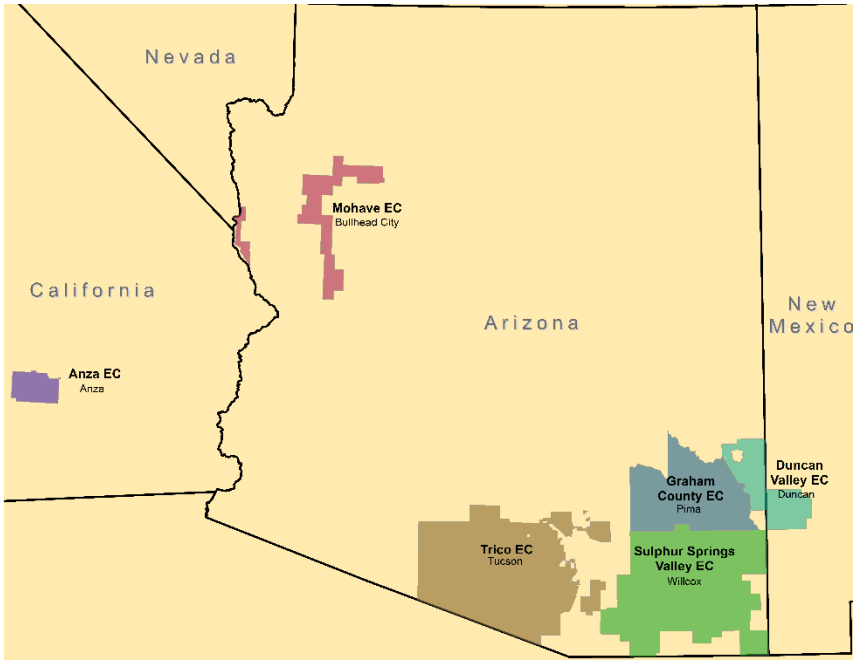
- Arizona Electric Power Cooperative (AEPCO) is a generation cooperative, which owns and operates Apache Generating Station, in Cochise, AZ.
- Southwest Transmission Cooperative (SWTC) owns and operates the transmission system to deliver AEPCO's power.
- Together, 'the G&T' serves six rural electric distribution cooperatives over a large geographical area—12 counties and numerous towns and small cities, serving about 150,000 meters primarily for residential use.
- The territory is rural, sparsely populated, and price-sensitive, with one third of customers living below the federal poverty line.



Apache Generating Station:
AEPCO's Principal Generation Source

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- 2 coal units (350 MW), 4 natural gas peaking units (205 MW).
- AEPCO's coal units were constructed in the late 1970's, during the debate leading up to the Fuel Use Act of 1978, which forbid the installation of natural gas-fired generation.
- Nearly 80% of the energy AEPCO delivers to its Members comes from the coal units at Apache.
- AEPCO's gas units are utilized primarily to hedge the market and maintain reliability in the event of coal unit outage or in peaking situations.
- AEPCO has made major environmental retrofits and upgrades to the coal units over the years.

Major Coal Unit Environmental Upgrades

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Year	Units	Project	Pollutant Addressed
1978	ST 2&3	Scrubber and Precipitator Installed	SO2, PM
1990-92	ST2&3	Scrubber and Precipitator Upgrades	SO2, PM
2009	ST2&3	Scrubber Upgrades	SO2
2010	ST2&3	Mercury Control Equipment	Hg
2016	ST2&3	Additional Mercury Control Equipment	Hg
2018	ST2	Conversion from Coal to NG	NOx, SO2, PM
2017	ST3	SNCR	NOx

Apache Generating Station:
Regional Haze Settlement

- In mid-2012, the Environmental Protection Agency (EPA) required AEPCO to install Selective Catalytic Reduction (SCR) technology on ST2 and ST3 by the end of 2017 if AEPCO intended to continue to operate them as coal-fired units.
- After significant analysis, the proposal would cost AEPCO more than $200M – unworkable for the Cooperative.
- In early 2013, working with EPA staff and the Arizona Department of Environmental Quality (ADEQ), AEPCO proposed the "AEPCO SIP Alternative."

Apache Generating Station:
Regional Haze Settlement (cont.)

Key Components of AEPCO SIP Alternative

- One coal unit converted to natural gas
- SNCR added to remaining coal unit
- $32M capital cost, and higher and possibly more volatile energy costs in the long term.
- Achieved significantly more carbon reduction than the EPA FIP (almost 50% on ST2)

AEPCO believed that this settlement would leave the G&T in a good position for coming carbon regulations…

CPP Building Block (BB) Implications on AEPCO

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BB1: Efficiency Improvements

- AEPCO has identified roughly 1 to 1.5% in available heat rate improvements with a reasonable payback schedule, assuming that coal units were preserved beyond 2020. This is well below the EPA's assumed level of 6%.

BB2: Re-dispatch to Natural Gas

- Although AEPCO has natural gas resources, they are not designed to be operated as baseload units, and the heat rates average from 11-14 MMBtu/MWh at best, resulting in extremely costly energy.
- Baseload units are required at Apache Generating Station to provide the area's grid reliability.

BB3: Use of Low or Zero-Emitting Sources

- AEPCO has contracts for roughly 30MW of hydro resources. Hydroelectric generation, under the proposed 111(d) rule, will not help in blending down AEPCO's CPP emission rate.
- The active generation required to supplement and back-up intermittent solar or wind generation, and the small size of AEPCO's fleet, make acquisition of these resources unattractive.

BB4: Energy Efficiency

- Due to the low population density and high transportation cost of resources, energy efficiency programs are extremely difficult to implement and highly uneconomical in rural communities.
- AEPCO has no opportunities for energy efficiency savings at the retail load level.

Proposed 111(d) Impact on AEPCO

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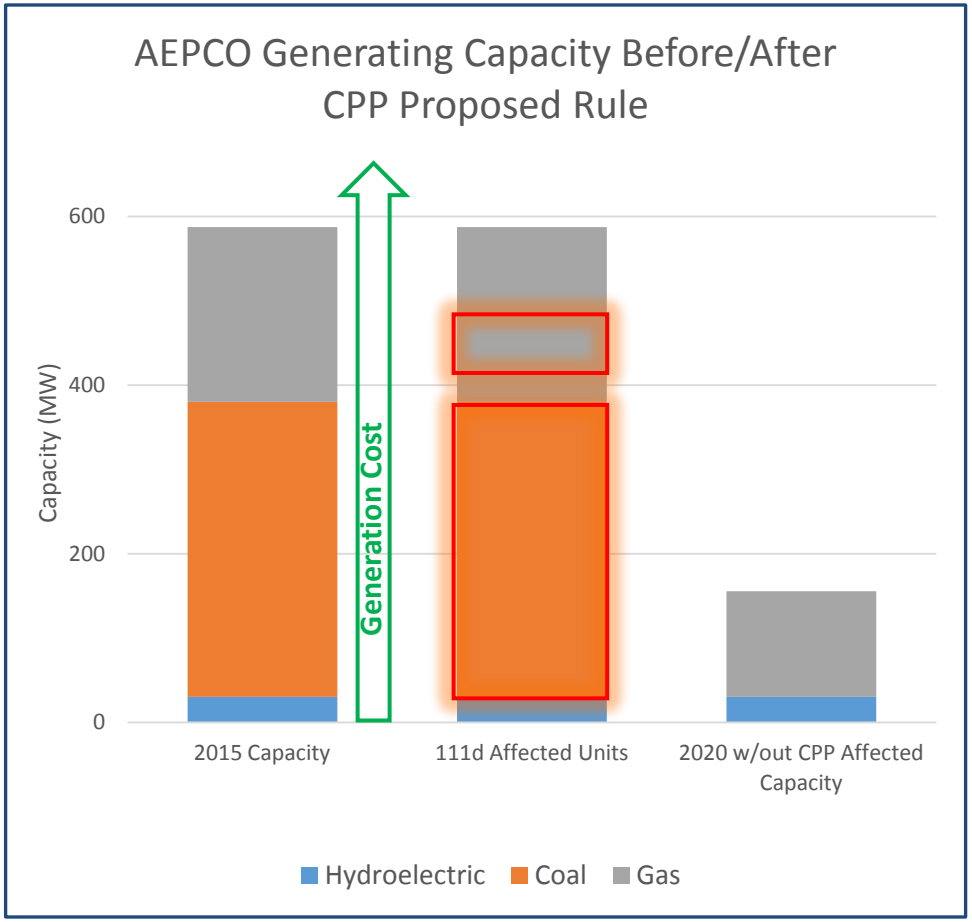
- If the aggressive AZ targets of the proposed 111(d) rule were imposed on AEPCO, over 90% of AEPCO's most affordable capacity, which is 75% of AEPCO's total capacity, would become stranded.
- Replacing the stranded capacity is expected to at least triple AEPCO's existing debt, which AEPCO believes not to be sustainable.



Estimated Clean Power Plan Impact to AEPCO

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Analysis was performed to project the costs which AEPCO would incur in order to comply with the proposed rule. Two primary options were considered: one in which AEPCO attempts to keep existing generating units, and another where the CPP-affected units are replaced.

Scenario:	AEPCO Compliance Option	AEPCO Exit Option
Description	Attempt to Remain in 111(d) program by retiring Coal and blending down Natural Gas emission rate on remaining units with Solar.	Retire all affected units in 111(d) program. Purchase New-Build assets to replace lost capacity.
Additional Cost (% Increase from Current Debt) [1]	**$580M (312% Debt Increase)**	**$418M (225% Debt Increase)**

[1] The Additional Cost for these options is in addition to AEPCO's current debt of **$186M**.

Conclusions

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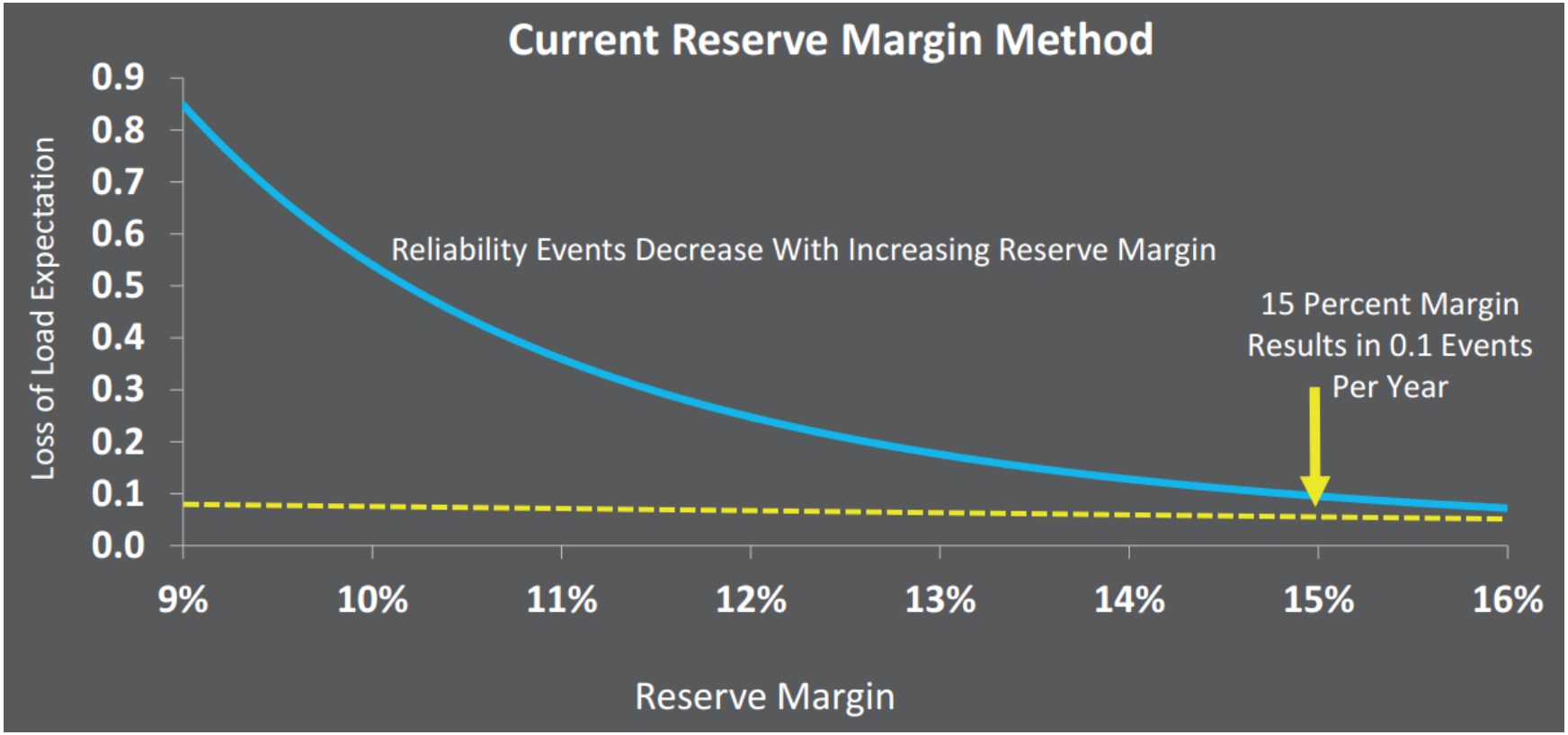
- AEPCO consistently makes decisions in the best interest of its price-sensitive end-use consumers, while balancing the requirements of environmental regulation.
- Due to AEPCO's position of serving rural communities and relative size, EPA's building blocks do not present a reasonable path to achieving the goals outlined for Arizona.
- If the aggressive targets of the proposed 111(d) were imposed uniformly on AEPCO (735 lbs/MWh in 2020-2029), analysis indicates a precipitous and untenable rise in AEPCO's costs and customer rates.
- AEPCO peak MW demand in 2020 is roughly 3% of AZ, with 2-3% on an energy basis. Consequently, any relief granted to AEPCO by the State or EPA is both extremely impactful to its customers as well as relatively de minimis to non-AEPCO customers.

APPENDIX

Reliability vs. Cost



Source: ACES Power Marketing. May, 2015

Proposals for Relief

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- **AEPCO Proposal**
  - Allows small Public and Cooperative utilities to 'Subcategorize' their units, holding them to a reasonable CO_2 standard outside of the EPA's 111(d) program.

- **Arizona Utility Group (AUG) Proposal**
  - Allow deferral of generator participation in state 111(d) standard, giving time for reasonable investment recovery.
  - Adjust the goals of the 111(d) program accordingly- resulting in a steady compliance path and continued electric reliability.

AEPCO Subcategorization Proposal

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- **Key Principles**:
  - Applicable to small Cooperative and Public Power generating utilities, with more than 20% of capacity in 111(d)-affected units.
  - Apply EPA's Building Blocks to the utility situation.
    - Improve generator efficiency; re-dispatch to NGCC; install solar capacity; meet half of state EE goal.

- **Results**:
  - Gives relief to those who need it most: non-profit entities with limited access to funds, as well as small customer base over which to spread rate shock.
  - Due to focusing on only the most needy entities and consumers, EPA will lose only 2% CO_2 savings from EPA proposed level.

AUG 'Remaining Useful Life' Proposal

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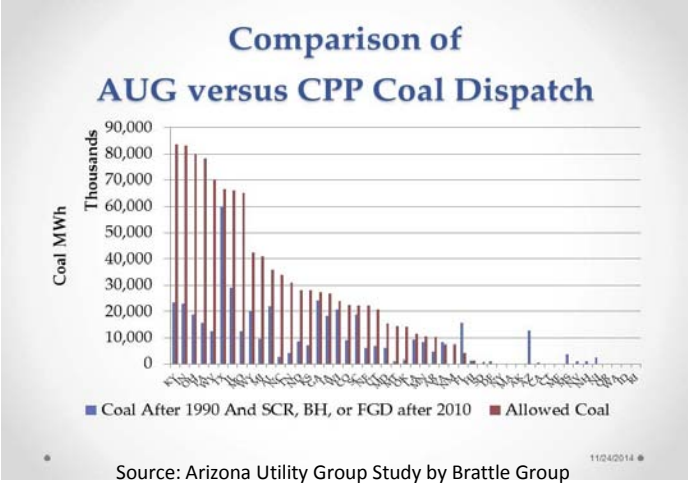
- **Key Principles**:
  - Applicable to states with aggressive re-dispatch targets and limited flexibility.
  - Raises each state's CO_2 targets in order to allow continued utilization of coal assets which are still useful and being paid for by consumers.
  - Would allow states to continue to operate coal plants which:
    - Are under 40 years old
    - Have large environmental upgrades
  - Only applicable to the states where there is not sufficient flexibility in proposed rule.



Source: Arizona Utility Group Study by Brattle Group

- **Results**:
  - Gives relief only to the states with the least flexibility and most need, resulting in roughly 2% additional emissions nationwide.