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Drake Decommissioning

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December 15, 2017

Drake Planning Discussion

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Agenda

- Initial Board Direction
- Board Inputs for Planning
- Community Engagement Summary
- Comparative Costs
- Rate Drivers
- Accelerated Transmission
- Rate Projections
- Risks/Uncertainties
- Other Considerations
- Recommendations
- Board Decision

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Initial Board Direction

Study decommissioning Drake Power Plant prior to the Board approved EIRP date of no later than 2035

- Analyze 2025 or 2030 decommissioning dates
- Make Drake decision separate from the next EIRP
- Maintain site for utility use, including generation, substation and other critical infrastructure

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Board Inputs for Planning

Complete	December UB	
✓		Consider early closure of Drake separately from EIRP
✓		Identify potential redevelopment footprint
✓		Consider decommissioning Birdsall
✓		Include financial metrics
✓		Include phasing decommissioning Drake units 6 and 7
✓		Identify environmental considerations of the Drake site
✓		Identify cost of planned transmission
✓		Include cost to physically decommission and salvage value
✓		Consider with long-range infrastructure funding
✓		Include Regional Transmission Organization implications
	✓	Identify incremental rate impacts of building transmission sooner in relation to the scenarios
	✓	Rate Impacts of Scenario 3c
	✓	Provide potential asset value of the Drake property as an off-set to cost

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Community Engagement - Outreach

- Outreach to date:
  - Utilities Board meetings
  - Re: Sources Blog
  - csu.org Website
  - Social Media
  - Insight eNewsletter (CSU employees)
  - Smart Home eNewsletter
  - First Source (business audience)
  - Baseline Survey
  - Connection Newsletter
  - Gazette Reporter Background
  - Gazette and Independent Articles
  - KRDO Radio Interviews
  - KRCC
  - KRDO TV
  - State of the Utilities (Business User Group)
  - Telephone Town Hall
  - In-Person Town Hall

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Community Engagement – Public Opinion

Quantitative Survey Summary (Aug. 31-Sep. 22, 2017)

- High level awareness on no later than 2035 decommission date
- Majorities equally concerned with air quality, health and the environment, and low-cost electricity
- Majority are willing to pay an additional 1-2% on their electric bills to decommission Drake earlier than 2035, in addition to other anticipated rate increases
- No majority opinion on how the Drake site should be used once the power plant is decommissioned.

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Community Engagement – Public Opinion

Qualitative Research Summary

- Telephone Town Hall (Nov. 29, 2017)
  - 1651 Connections
  - Low-cost electricity (56% - 87 respondents) and Air Quality, Health & the Environment (31% - 87 respondents) were primary areas of concern
  - 61% (66 respondents) Not willing to pay more to close Drake early vs. 39% (42 respondents) willing to pay 1% - 5% more to close Drake early
  - Replacement options split between locating new generation at same site (41% - 29 respondents), outside service territory (34% - 24 respondents) and a combination (24% - 17 respondents)
- In-Person Town Hall (Dec. 5, 2017)
  - ~200 in attendance
  - 40 Speakers
  - 30 spoke in support of an early closure of Drake and in favor of more renewable energy
  - 10 spoke in favor of keeping the closure of Drake later and in favor of keeping rates as low as possible

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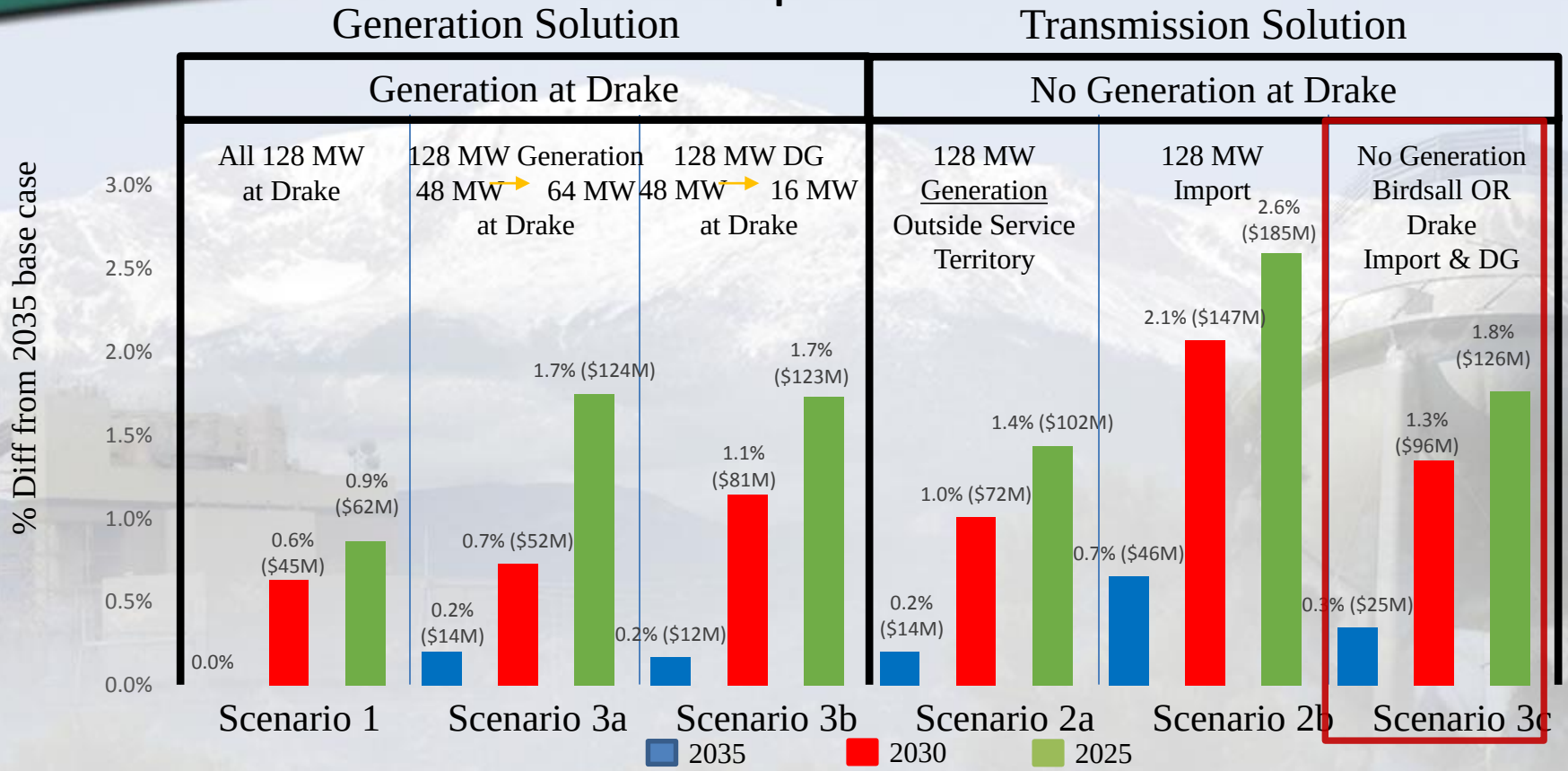
Comparative Costs



All scenarios 25 year NPVs

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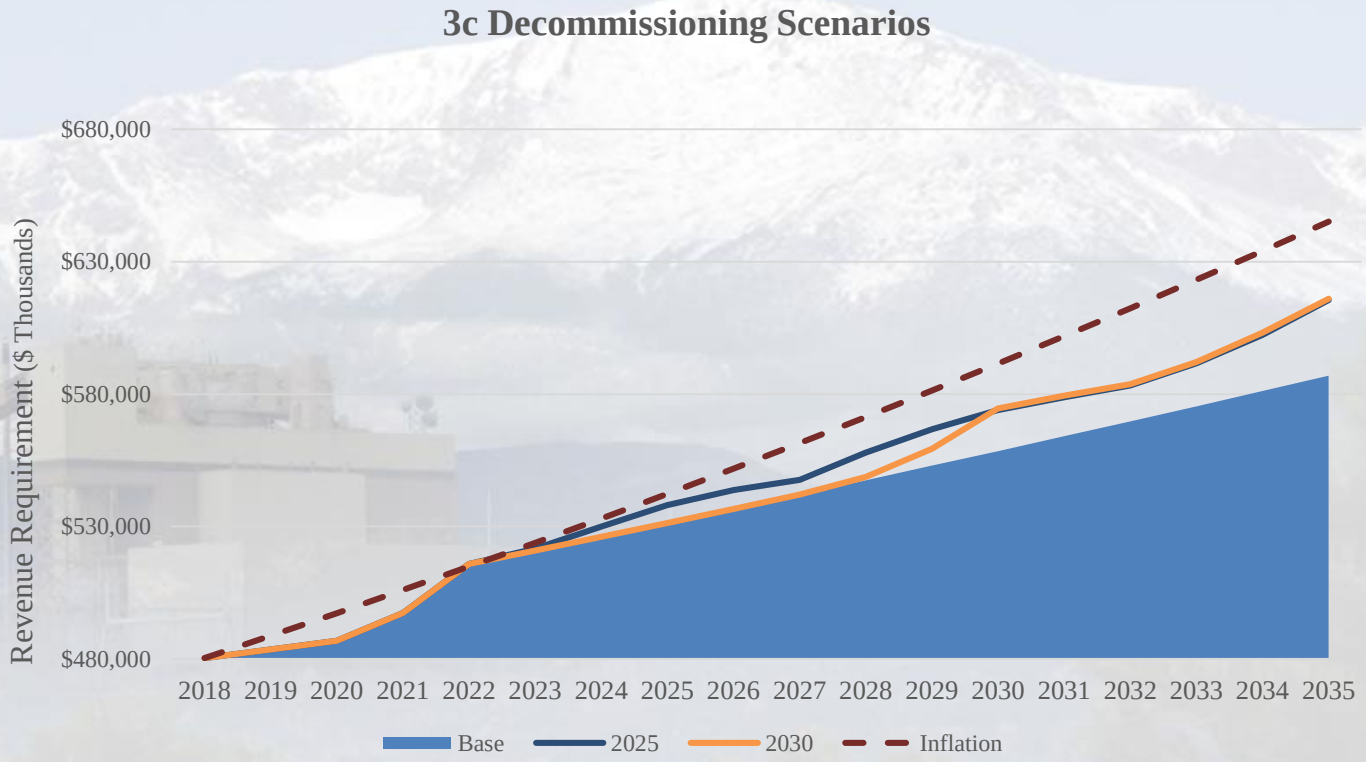
Comparative Costs



Assumptions

- Costs inflated to year spent
- 5 Yr Plan Rev. Requirement
  2023-2035 1% growth
- 0.6% 2019 Energy Vision
- Proprietary Fuel Forecast
  Current price curves
- Inflation at 1.75%

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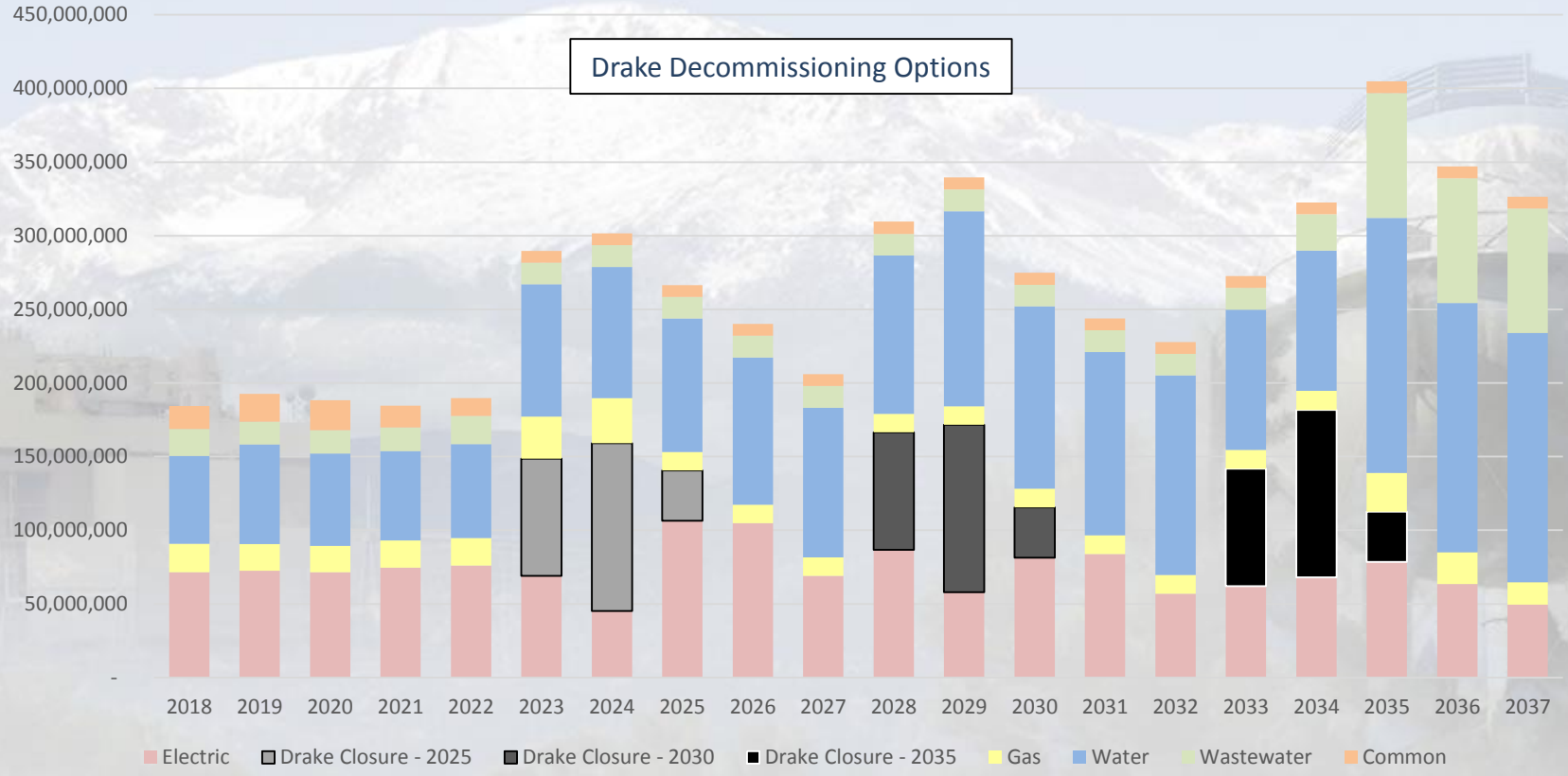
Comparative Costs:
Potential Infrastructure Investments (in thousands, in 2017 dollars)
Drake 3c Scenarios



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3c Rate Drivers

- Fuel Forecast
- Debt Service
- Operation & Maintenance Cost

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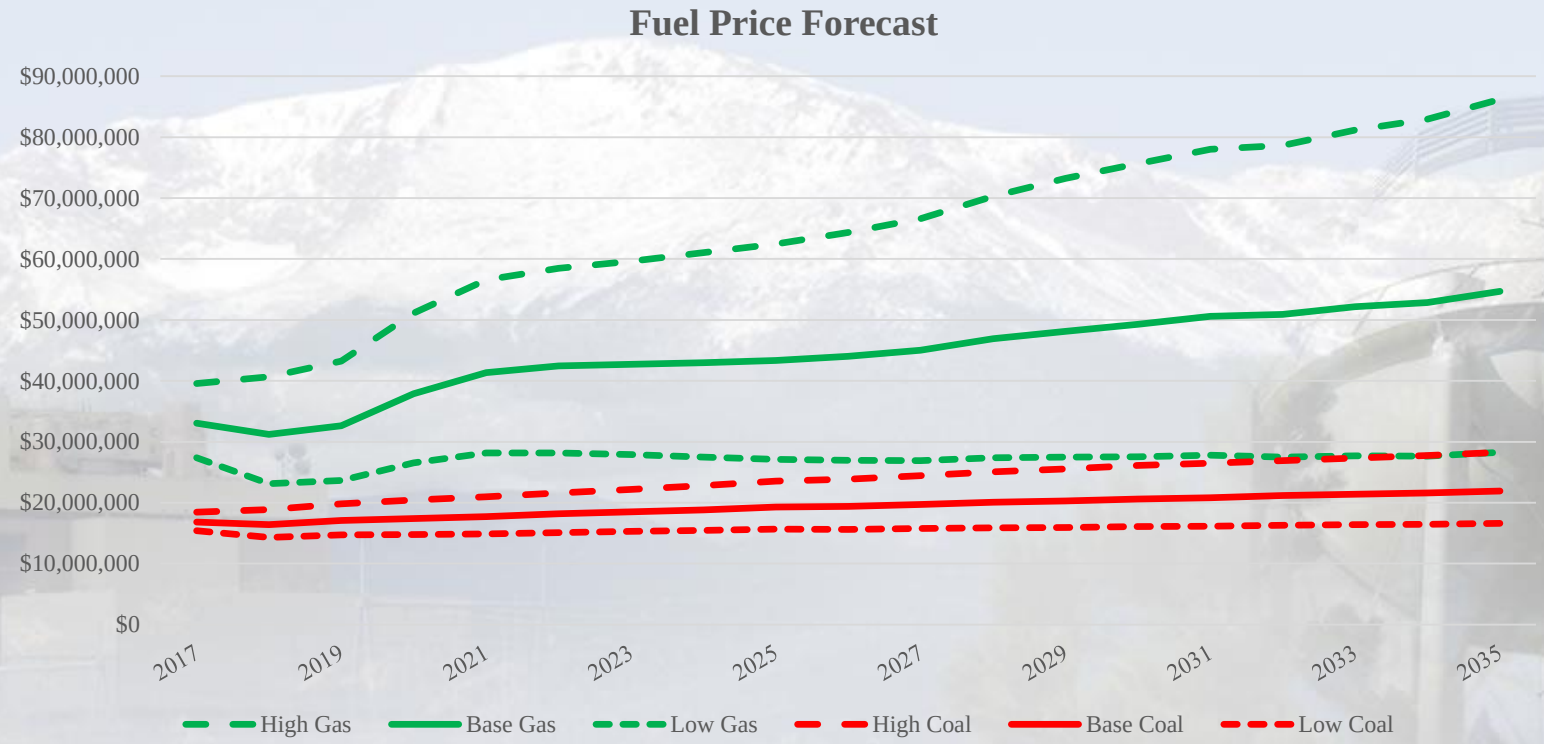

Source: ABB Consulting

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3c Retirement Scenario		Additional Forecast Fuel Costs to Customers for pre-2035 retirement*
2025	Low Fuel	$25M
	Base	$110M
	High Fuel	$215M
2030	Low Fuel	$15M
	Base	$65M
	High Fuel	$125M

* Table represents changes in fuel commodity costs only

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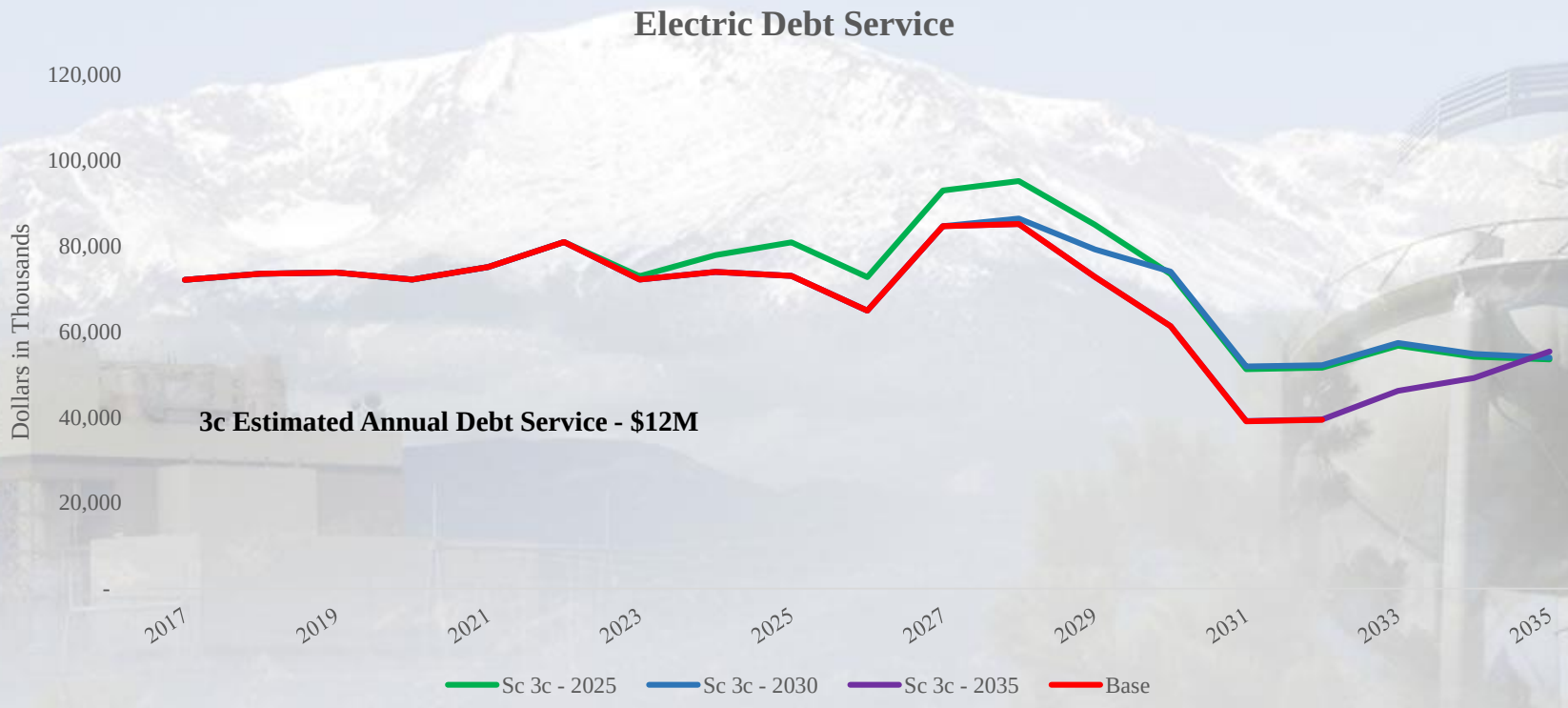

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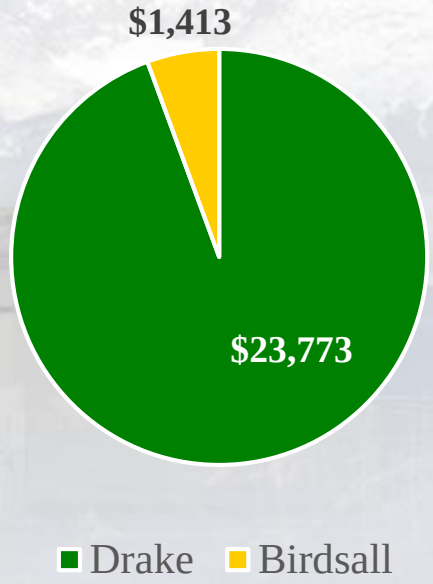
Operation & Maintenance Costs

10yr Avg Non-Fuel O&M Cost
$ in 000's



Estimated Annual O&M Impact	$ MM
Drake/Birdsall O&M Reduction	($21)
Estimated 3c O&M	4
Annual Net O&M Impact	**($17)**

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3c Rate Drivers	$ MM
Debt Service on New Generation*	$12
Debt Service Coverage*	10
Non-Labor O&M Cost Reductions	(17)
Annual Non-Fuel Rate Drivers	**$5**
Additional Fuel Cost (base)	13
Estimated Annual Rate Impact	**$18**

* $280 million, 70% debt funded at 5% over 30 years

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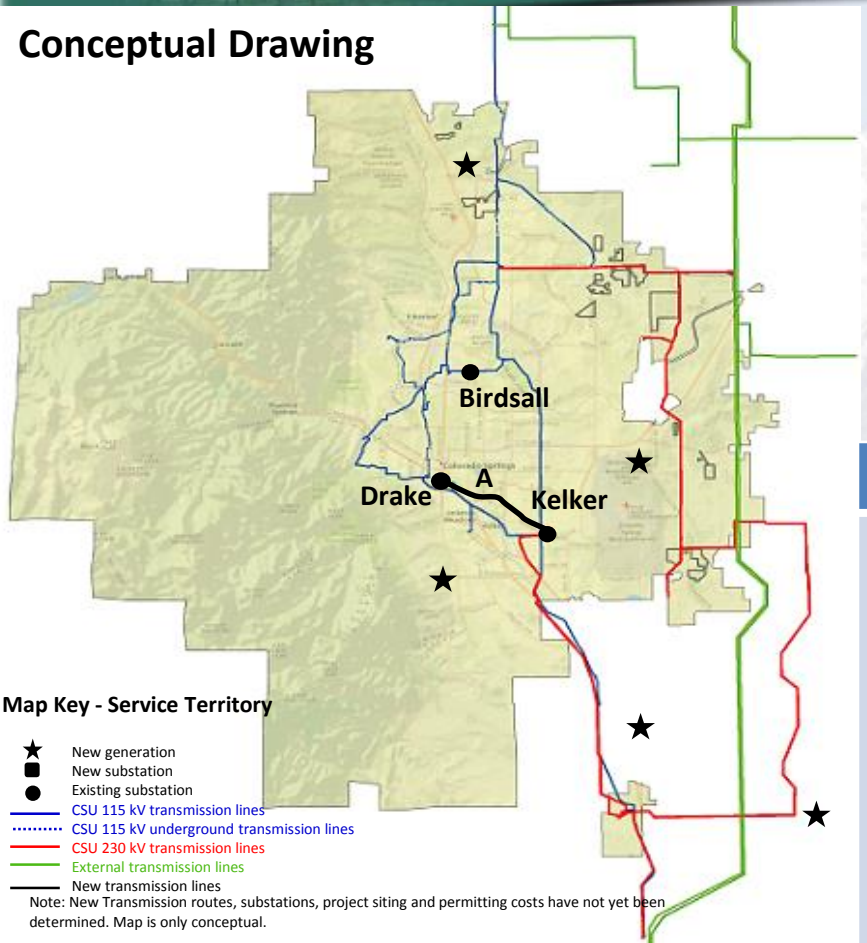
Conceptual Drawing



Scenario #3c: Distributed Generation – No Generation at Drake or Birdsall

- Requires 192MW initially and an additional 80MW over 30 years inside or outside service territory

Transmission Estimated Costs

Year of Decommission **Project A for $26M**

Advantage	Disadvantage
• Downtown aesthetics • Portion available for redevelopment • No generation at Drake or Birdsall, but generation at military bases and import • Allows transmission solution and gives flexibility	• Potential permitting and siting challenges • Gas availability unknown • Back-up fuel • Constrained gas pipeline capacity • Microgrids are complex • Transmission project • Operation of multiple sites

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Accelerated Transmission

- $26M additional capital spread from 2020 – 2023
- 0.25% incremental rate impact

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Estimated Typical Monthly Electric Bill
Scenario 3c (Base Fuel)

Rate Schedule	Base Case	Increase/ (Decrease)	% Change	2025 - 2035 Cummulative Increase	2030 - 2035 Cummulative Increase
(a)	(b)	(c)	(d) [(c) / (b)]	(e)	(f)
Residential					
Electric - Non-fuel	$ 69.70	$ 1.81	2.6%		
Fuel Capacity & ECA	18.69	2.27	12.1%		
Electric Service Total	$ 88.39	$ 4.08	4.6%	$ 489.74	$ 244.87
Commercial					
Electric - Non-fuel	$ 421.03	$ 3.79	0.9%		
Fuel Capacity & ECA	158.40	19.23	12.1%		
Electric Service Total	$ 579.43	$ 23.02	4.0%	$ 2,762.28	$ 1,381.14
Industrial					
Electric - Non-fuel	$ 22,401.74	$ 89.61	0.4%		
Fuel Capacity & ECA	10,177.60	1,235.56	12.1%		
Electric Service Total	$ 32,579.34	$ 1,325.17	4.1%	$ 159,020.11	$ 79,510.06

Projected rate increases for Drake decommissioning only using 2017 cost of service study

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Risks/Uncertainties

- Fuel Price Volatility
- Regional Transmission Organization
- Regulatory Requirements
- Tax Policy
- Breakthrough Technologies
- Net Land Value
- Plant Investment
- Workforce Planning

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Other Considerations

- Economic development
- Community reputation
- Air quality, health and environment
- Downtown aesthetics
- Military resiliency

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Recommendations

- Support Scenario 3c - distributed generation and import power options
- No replacement generation at Drake or Birdsall
- Accelerate transmission projects (2023)
  - Provides maximum flexibility on all scenarios and all closure dates (2025-2035)
  - Retain consultant to advance transmission projects (2018)
- Complete Site Assessment Studies (2019)
  - Appraisal
  - Phase 2 Environmental
  - Salvage Value
- Complete RTO effort (2019)
- Conduct EIRP (2020)

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Board Decision