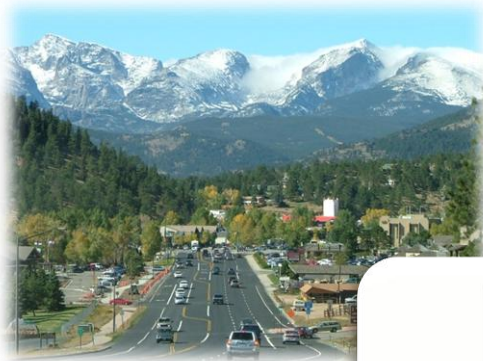


Estes Park



Longmont



Fort Collins



Loveland



Resource Planning Update

Loveland Utility Commission

September 2015

Strategic Planning Initiatives



Resource Management Initiative

Platte River Power Authority employs an adaptive strategy to cost-effectively maintain reliability, manage risks, and ensure regulatory compliance

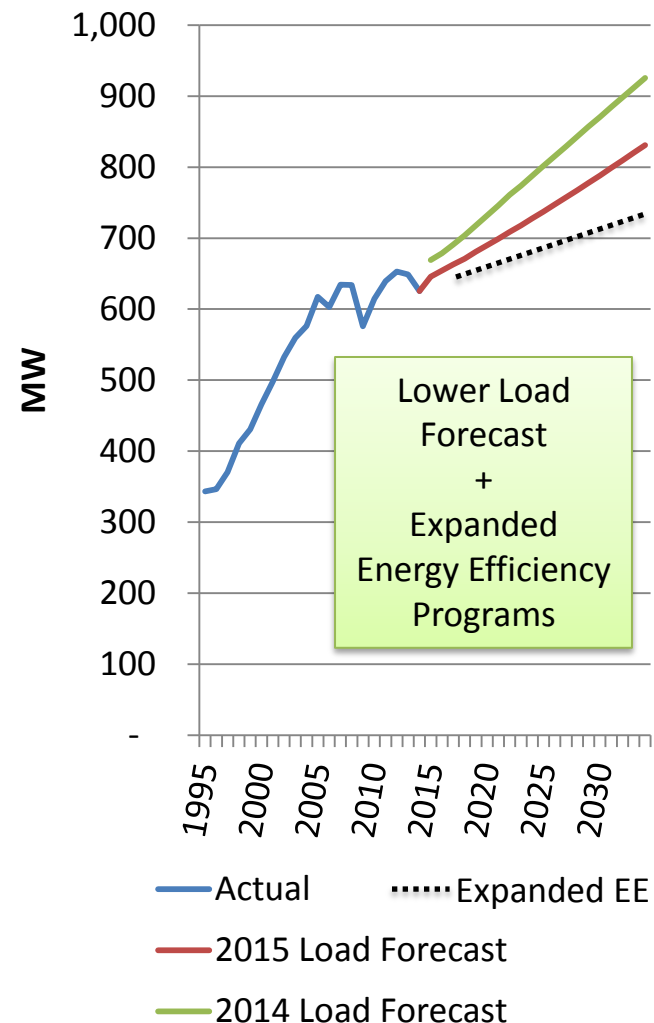
- **Adaptive** → many uncertainties – need to be flexible
- **Cost effective** → can go beyond minimum requirements
- **Reliability** → non-negotiable – gotta have this
- **Risk management** → ongoing process
- **Compliance** → also non-negotiable – once defined

Resource Management Considerations

- We have time for new resource decisions
 - Great performance of existing resources
 - Surplus capacity and energy available
 - Colorado renewable standard met
 - Lower future capacity needs vs. historical
- Wide range of future options – (promising cost trends)
- Many uncertainties going forward (some beyond our control)



Clean Power Plan



Clean Power Plan



- EPA Rule (Federal)
- States Implement
– CO specific process
- ~ 25 to 40% reduction
in CO₂ for Colorado
- Platte River amount
uncertain
- State rules due by
September 2018
- Performance by
January 2022

Scenario	Implications for Platte River	
Colorado State Implementation Plan Alternatives	Physical Reduction Level	Potential Cost
Command & Control – Rate-Based		
Command & Control – Mass-Based		
Single State Tax		
Single State Trading – Free Allowances		
Single State Trading – Allowance Auction		
Multi-State Trading – Free Allowances		
Multi-State Trading – Allowance Auction		

**Energy Efficiency
“Common Programs”
Since 2002**



**Efficiency
Works
Co-branding**

**Rawhide Flats
Solar
(30 MW)**



**Craig Unit 1
Exit Strategy**



Resource Changes

**Medicine Bow
Wind Pilot
First in Region
1998**



**Expansions
through 2004**

**Silver Sage – 2008
(12 MW)**



**108 MW
Total
Wind & Solar
(2016)**

**Spring Canyon
(60 MW)**



**Medicine Bow
Life Extension
(6 MW)**



**Distributed Resources
Joint Activities**

2016 Budget Items:

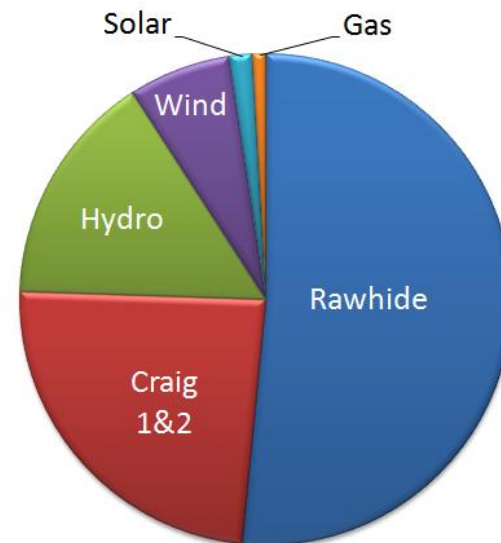
- **Expanded Energy Efficiency**
- **Demand Response Pilot**

Other 2015/2016 Activities:

- **Combined Heat & Power**
- **System Community Solar**
- **Loveland FEMA Solar**
- **Fort Collins Solar Programs**
- **Total DG by 2016 ~ 12 MW**
- **DG Strategy Development**

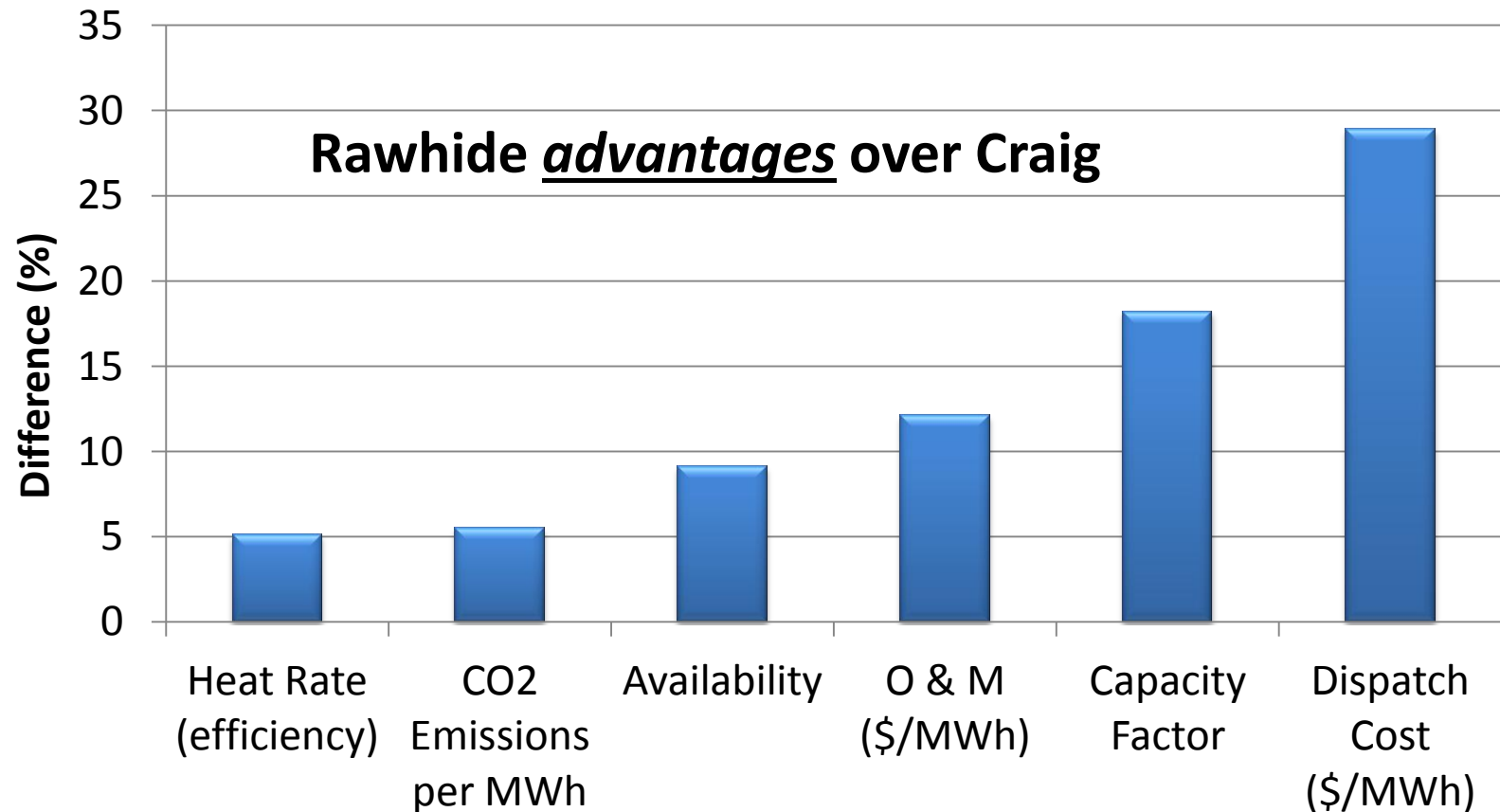
Why Exit Craig Unit 1?

- Potential to avoid future costs
- Big enough to allow major CO₂ changes to mix
 - About one-fourth of all system energy
 - About one-third of coal energy
- Most of Craig output serves surplus sales
 - Sales to others (not Municipalities)
- Rawhide provides sufficient base load
 - Need more flexible resources
- Craig capacity is incremental – two units
- Coal contract flexibility
- Craig units significantly underperform Rawhide

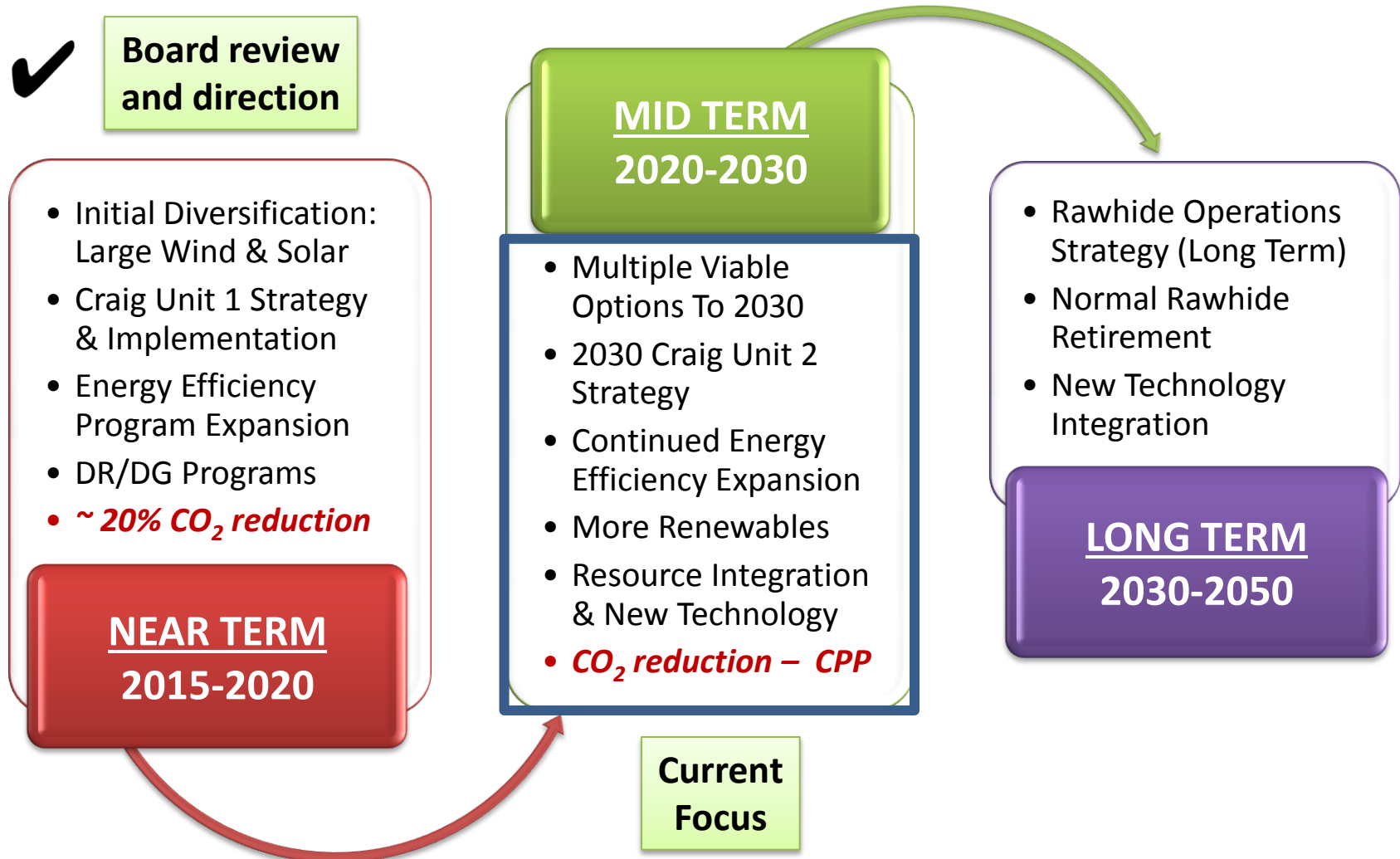


Other Craig Owners

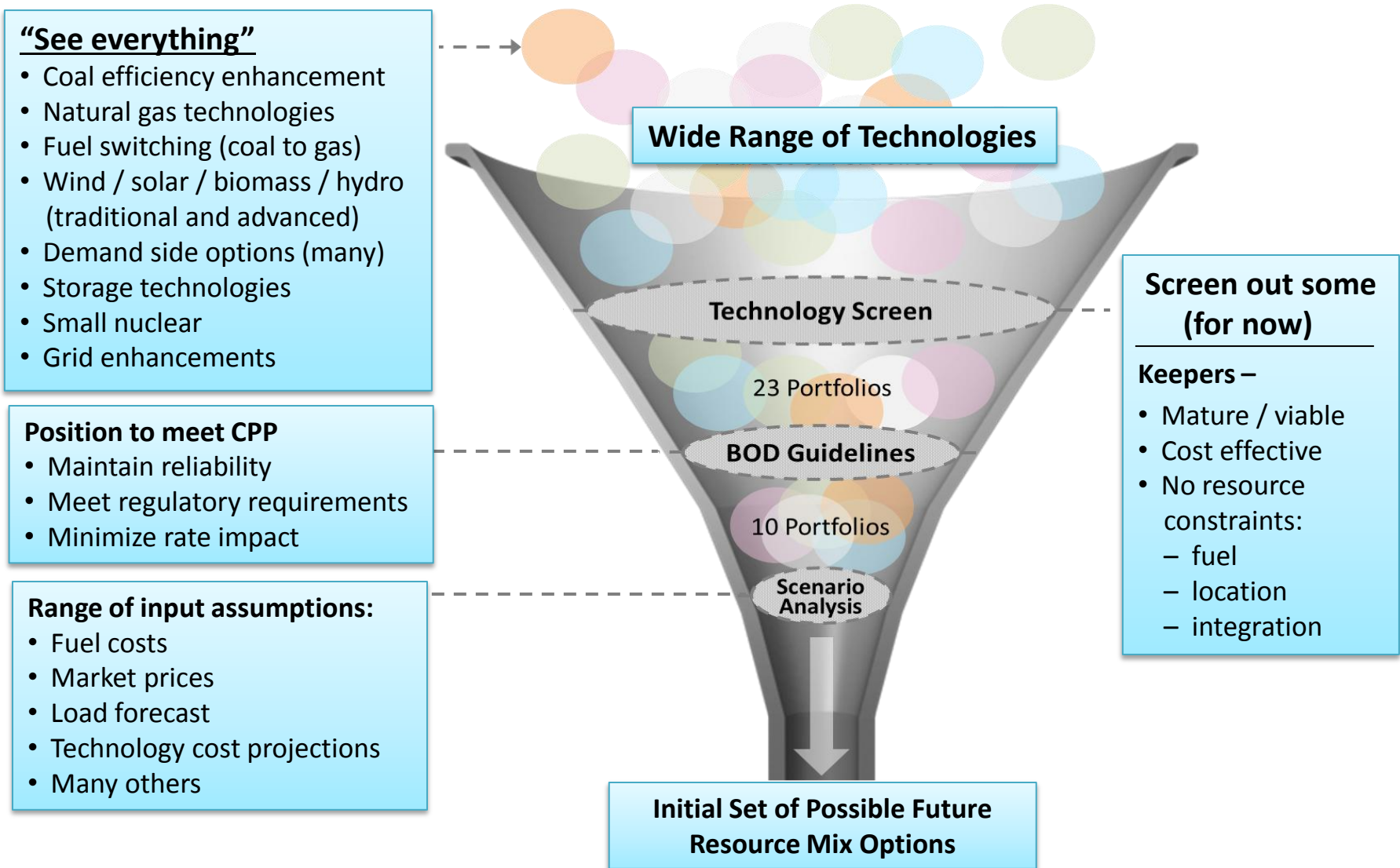
Performance – Rawhide vs. Craig



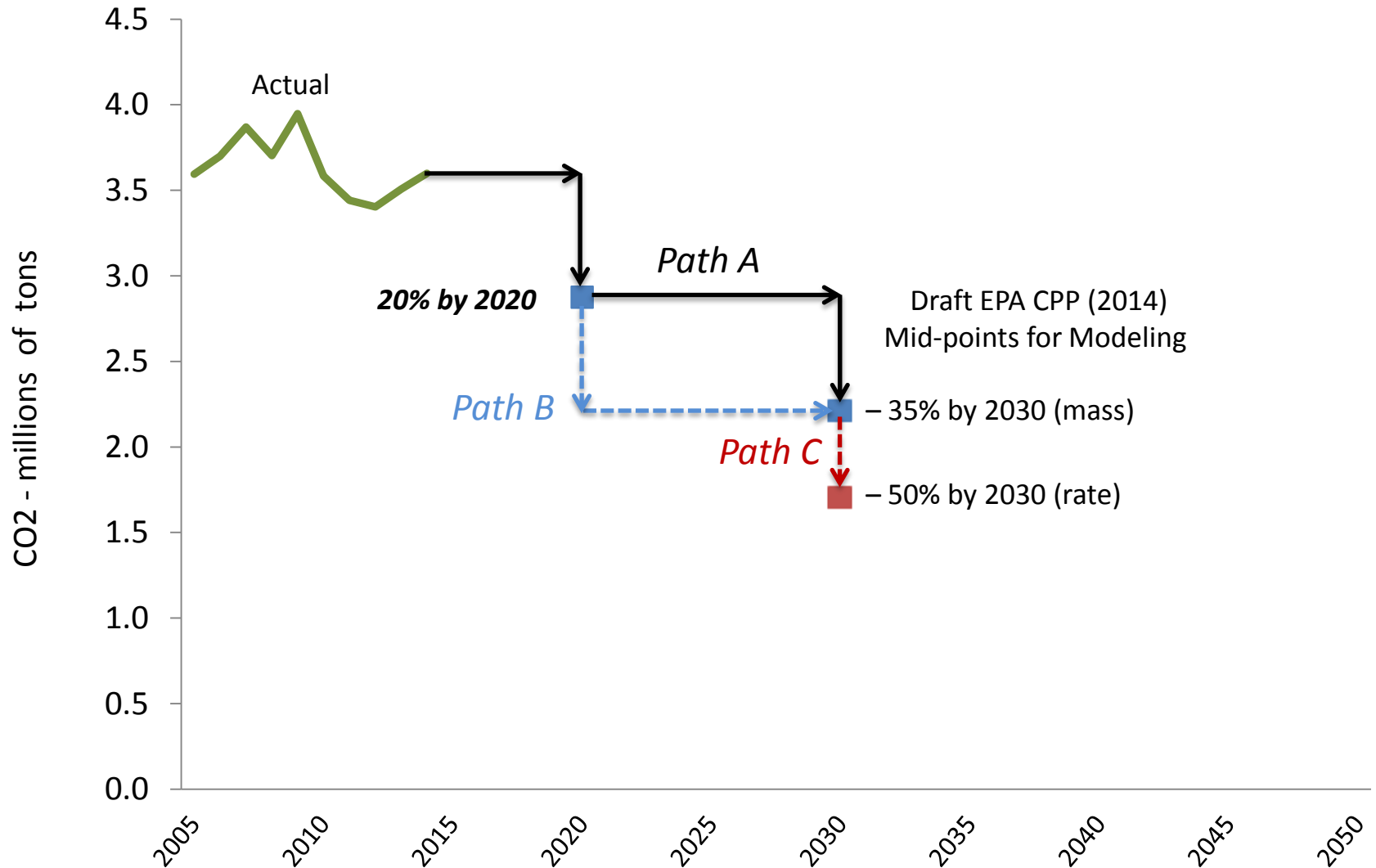
Planning Timeframes



Resource Modeling – Screening



Modeling CO₂ Emission Paths



Path A – Resource Changes / Mix

Energy Efficiency Programs



- **Net capacity increase
~332 MW (43 MW firm)**
- **May not comply with new
EPA rule 2025-2030**

335 MW



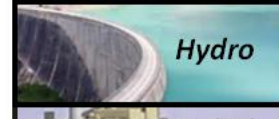
150 MW



265 MW



90 MW



280 MW



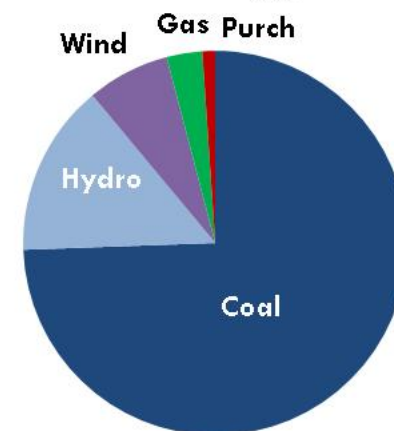
2015

2020

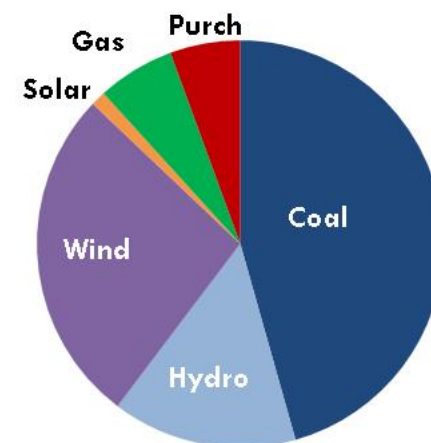
2030

2035

2015 Energy Mix



2035 Energy Mix



Path B – Resource Changes / Mix

Energy Efficiency Programs



- **Net capacity increase**
~ 332 MW (43 MW firm),
same as Path A
- **More aggressive than CPP**
(2020-2025)
- **35% CO₂ reduction by 2030**

335 MW



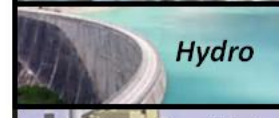
150 MW



265 MW



90 MW



280 MW



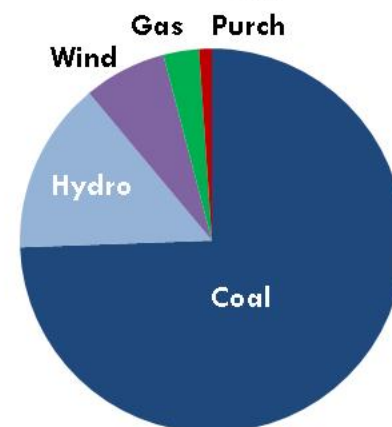
2015

2020

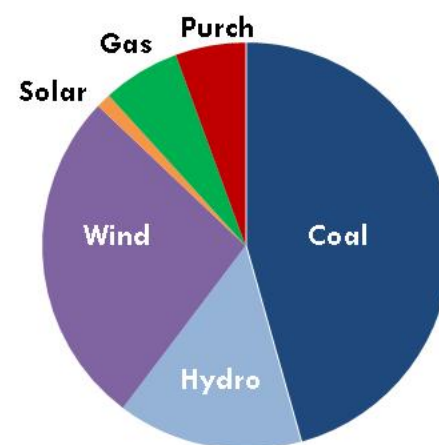
2030

2035

2015 Energy Mix



2035 Energy Mix



Path C – Resource Changes / Mix

Energy Efficiency Programs



- **Net capacity increase
~472 MW (78 MW firm)**
- **More renewable sources**
- **Rawhide operates at lower
capacity factor for 2030 +**
- **~50% CO₂ reduction by 2030**

475 MW



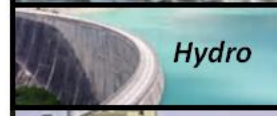
150 MW



265 MW



90 MW



280 MW



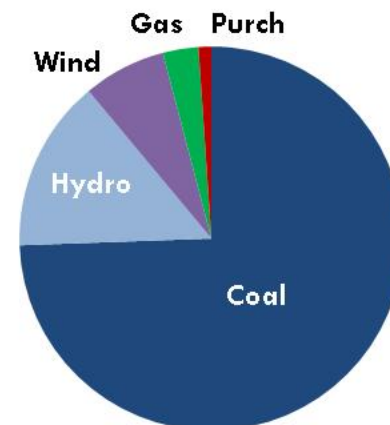
2015

2020

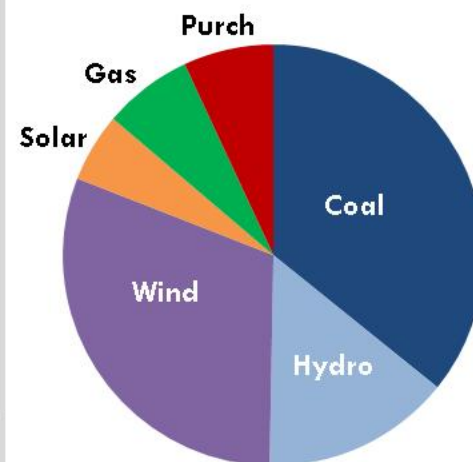
2030

2035

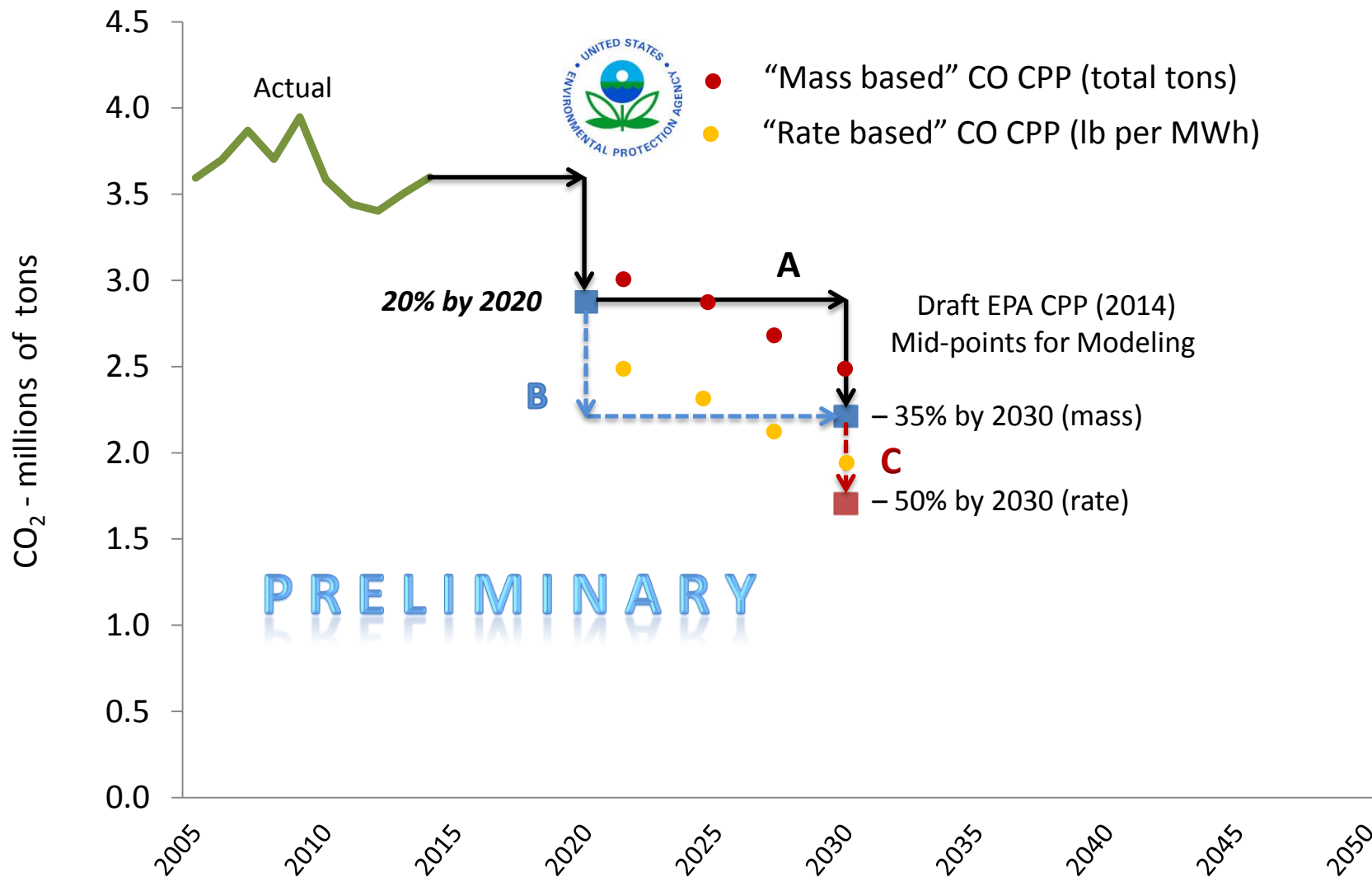
2015 Energy Mix



2035 Energy Mix



Modeling CO₂ Emission Paths



Modeling Wholesale Rates – Many Variables

CO₂ REDUCTION

25% 50%



TIMING

2020 → 2030



RESOURCE MIX

EE/DSM



Coal



Gas



Wind



Solar



Others



IMPLEMENTATION MECHANISM

Tax



Command & Control

Cap & Trade

INPUT ASSUMPTIONS

Loads



Fuels



Market



Financing



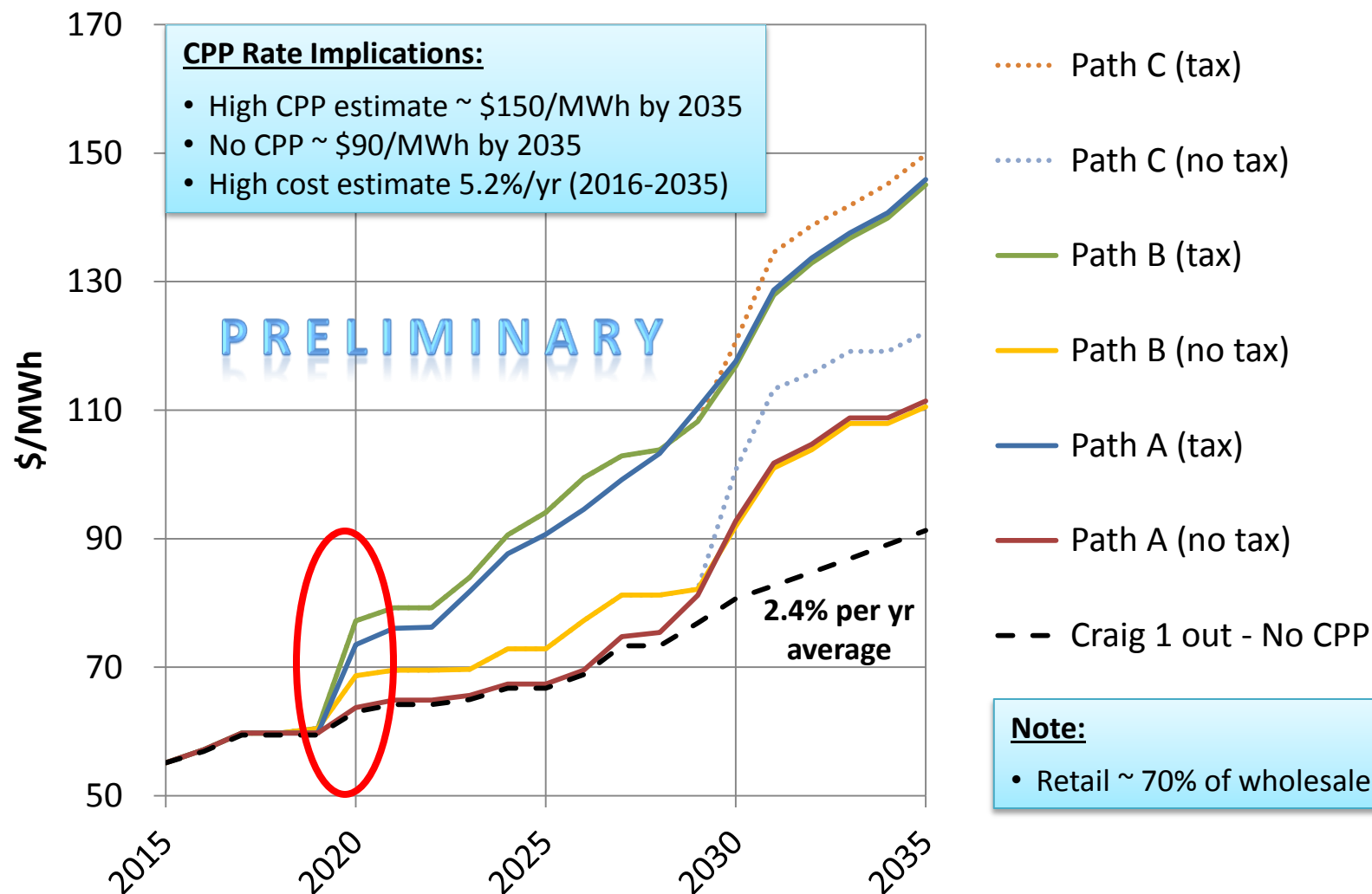
Trending



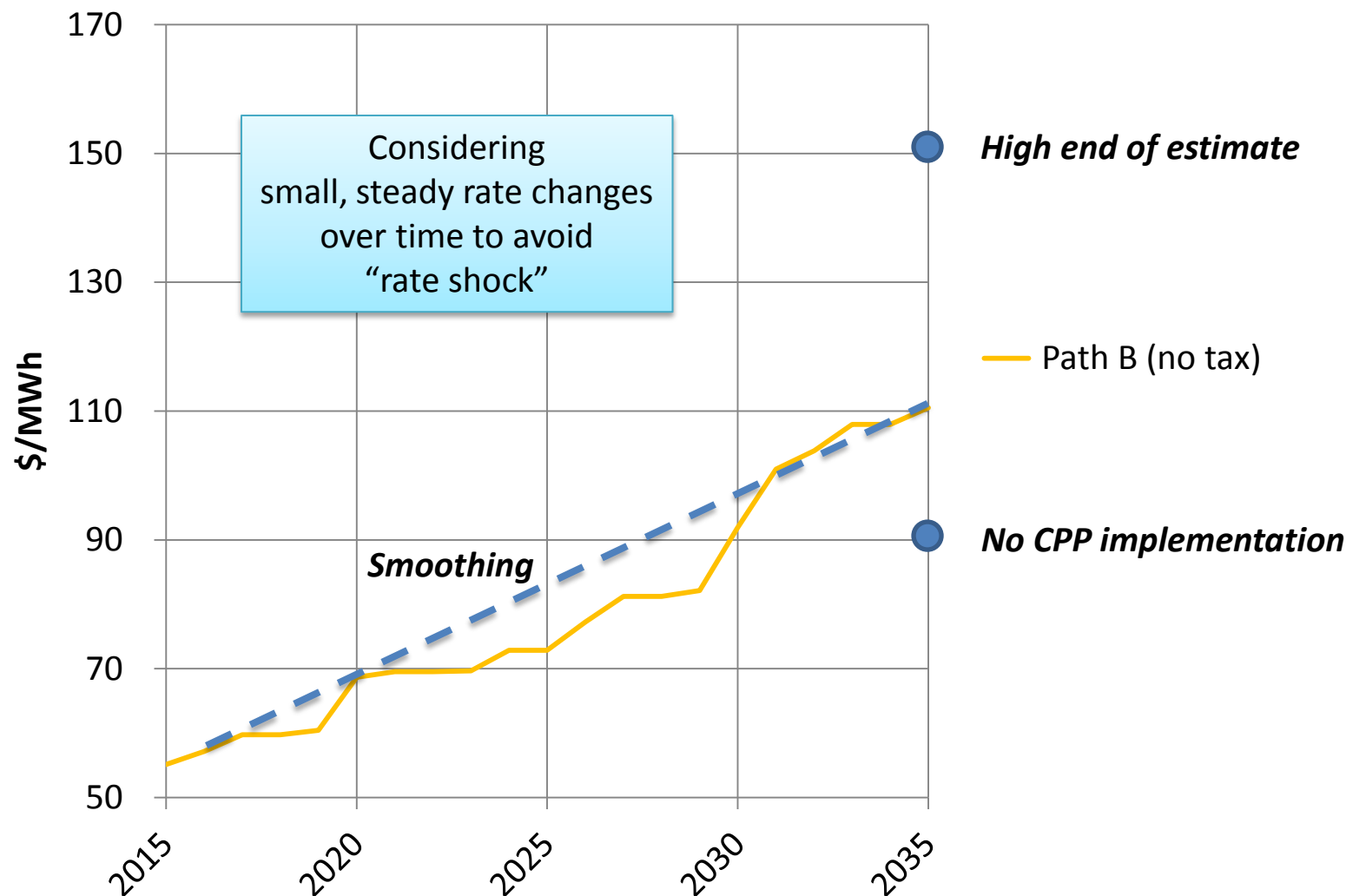
Others



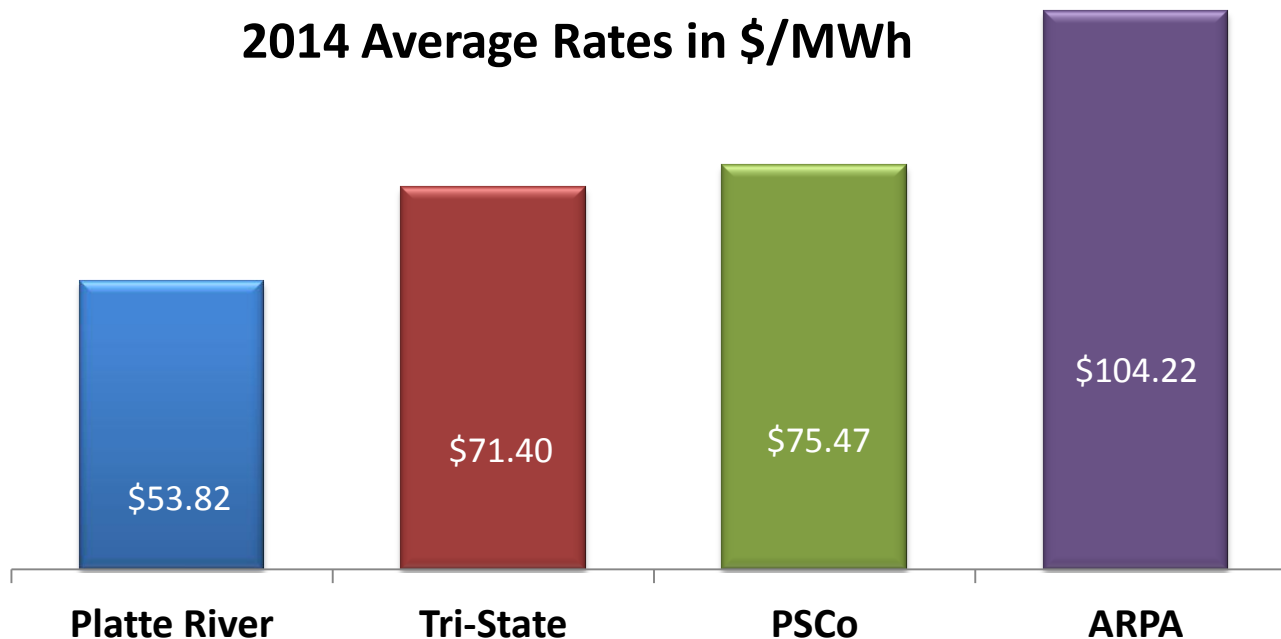
Modeling – Wholesale Rates



Wholesale Rates – Smoothing Rate Impacts



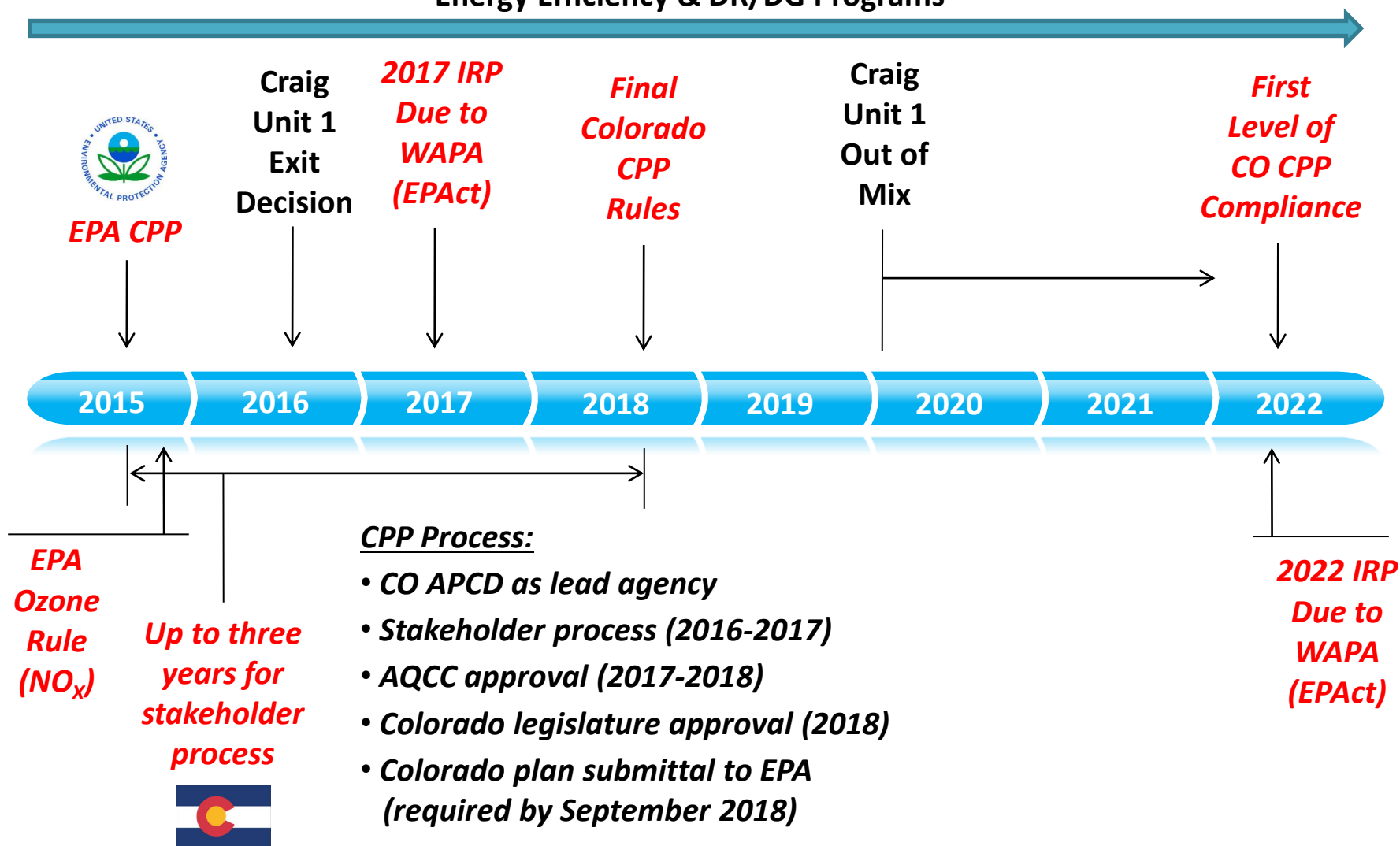
Wholesale Rates – Colorado Suppliers



- Next closest supplier (Tri-State) was 33% higher in 2014
- For the last 10 years, others have risen faster than Platte River
- Platte River may rise faster in the future due to high coal in mix (depends on CPP implementation in Colorado)

Planning Timeline

Energy Efficiency & DR/DG Programs





Questions & Discussion