

Proposed Resolution

1

- ☐ PUDs may support or oppose a ballot proposition (RCW 42.17A.)
- ☐ Commission considering a draft resolution
 - In opposition of Initiative 1631 (Initiative)
 - Resolution provided on website and as a handout
- ☐ Resolution is limited on impacts to District operations, costs, and electric system reliability

Public Hearing

2

- Public Hearing
 - Open Public Hearing
 - Staff Analysis/Commission Comments
 - Break
 - Open public comment
 - Approximately equal time “for” and “against” Initiative
 - Questions about presentation
 - Close public comment
 - Close public hearing

- Consideration of Resolution by Board of Commissioners
 - Commissioner discussion
 - Including responses to questions about staff presentation
 - Vote on Resolution (if taken)

Initiative 1631

The Protect Washington Act

Impact Analysis on District Operations, Costs, Reliability



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Staff's Analysis

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- Focus is on impacts to the District and the electric sector
 - ▣ We do not analyze impacts on other sectors of the economy
- The Initiative is complex
 - ▣ Many hours devoted to understanding the Initiative and its impacts
 - ▣ District's methodology & results benchmarked with other utilities
- Emission factors deferred to rulemaking
 - ▣ District required to make best-effort assumptions
- Presentation objective is to provide a full-scope overview
 - ▣ Will not cover each slide in detail due to time limitations

How This Presentation is Organized

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- **Context – District Power Supply**
- **Initiative & Impacts**
 - ▣ **Overview**
 - ▣ **Credits for Pollution Fees Paid**
 - ▣ **Financial Impacts**
 - ▣ **Carbon & the Electric Sector**
- **Staff Observations**

Context – District Information

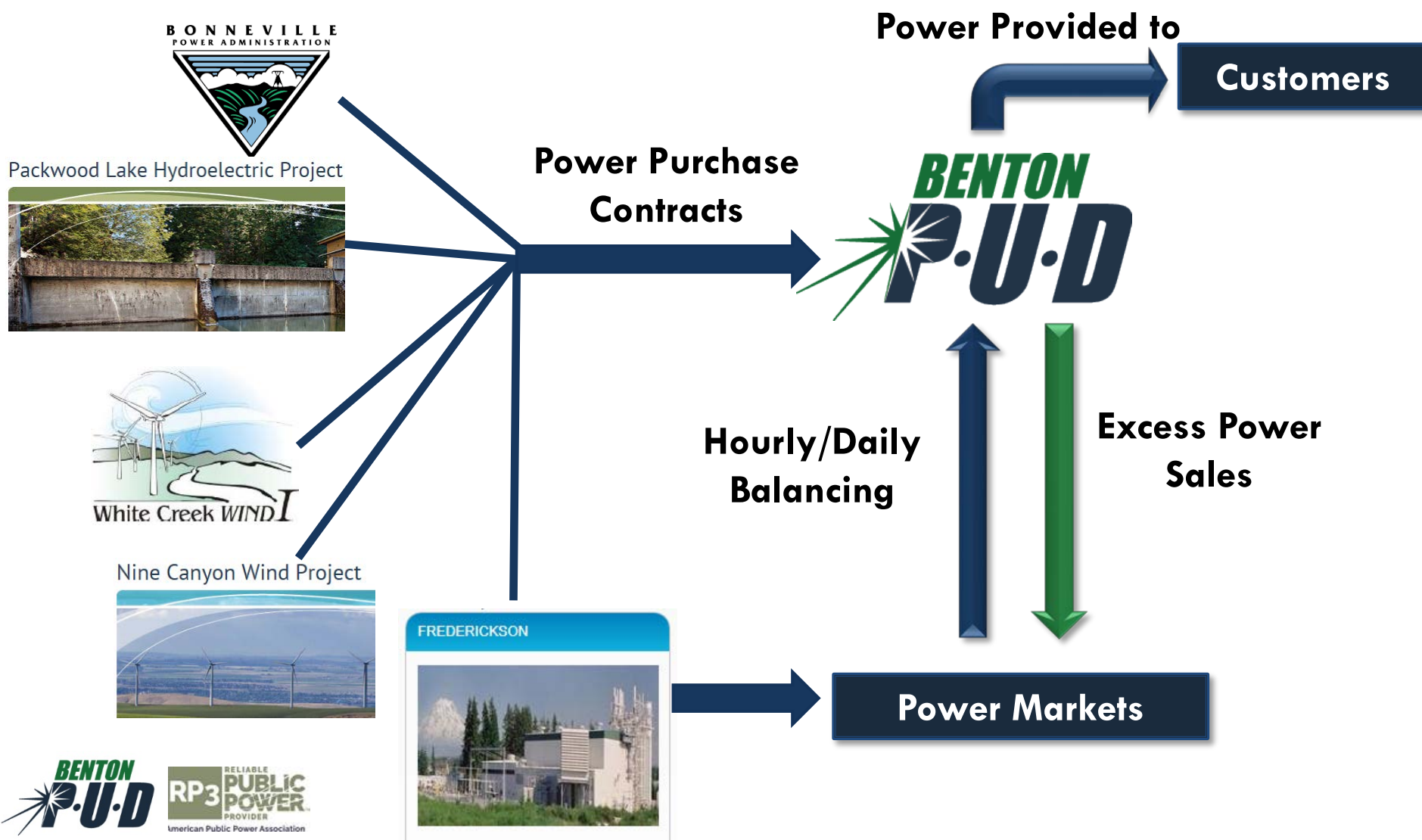


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Overview Buying & Selling Power

Simplified Example

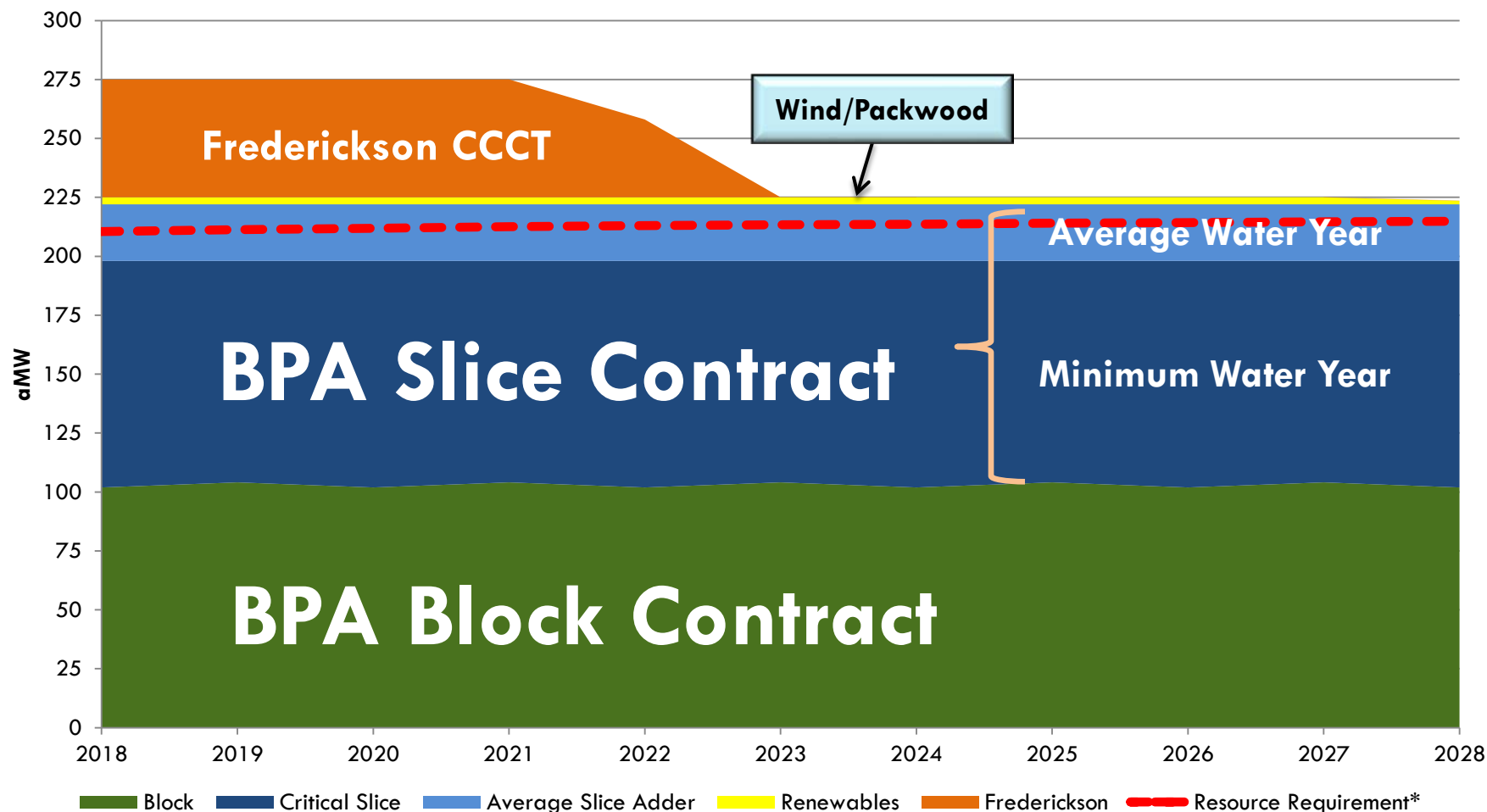
7



Benton PUD Load & Resources

Annual – Based on Average Water Years

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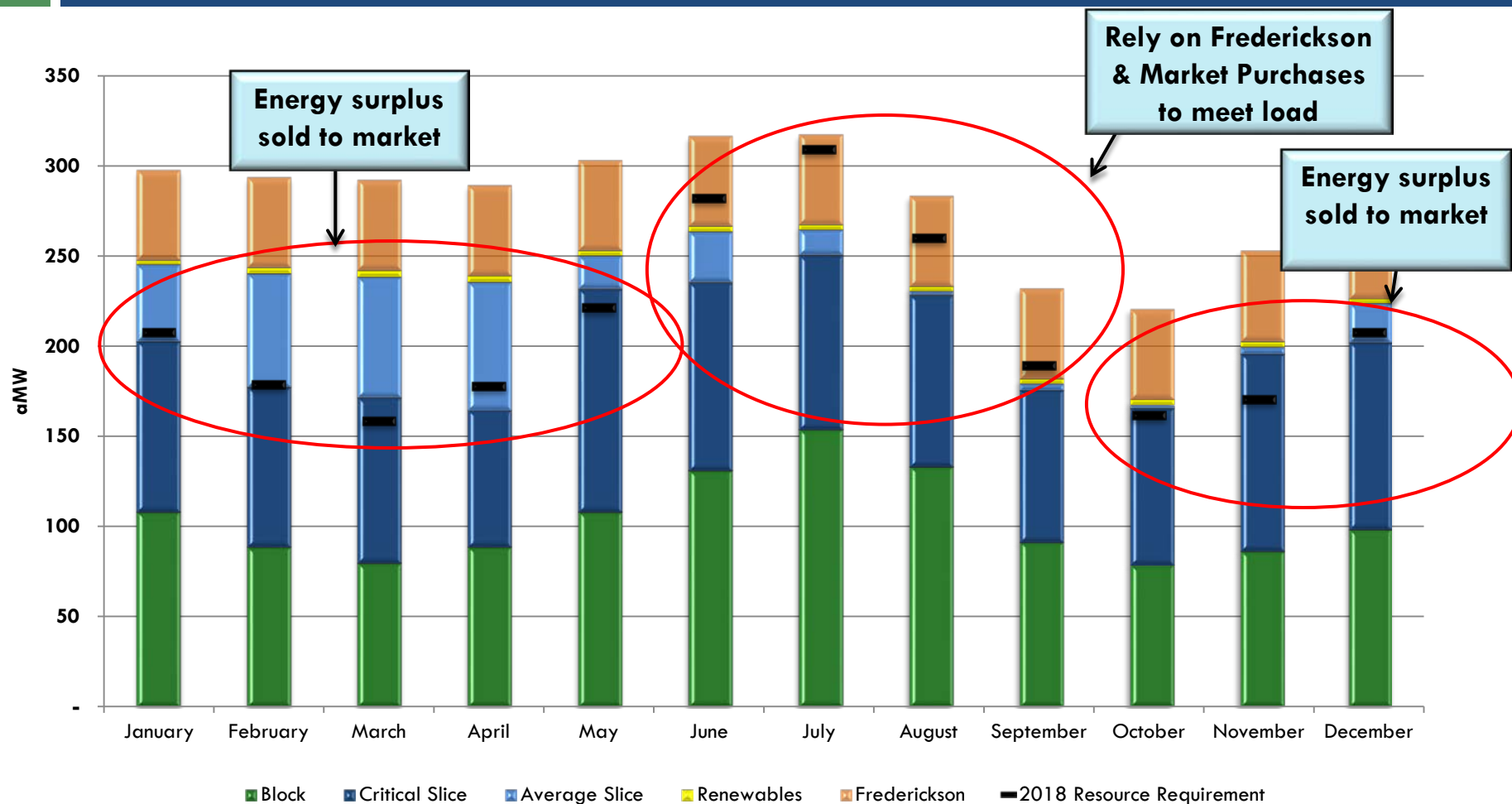
* Retail Load Forecast plus distribution & transmission losses

* CCCT – Combined Cycle Combustion Turbine

Benton PUD Load/Resource Balance

Monthly – Average Water

9



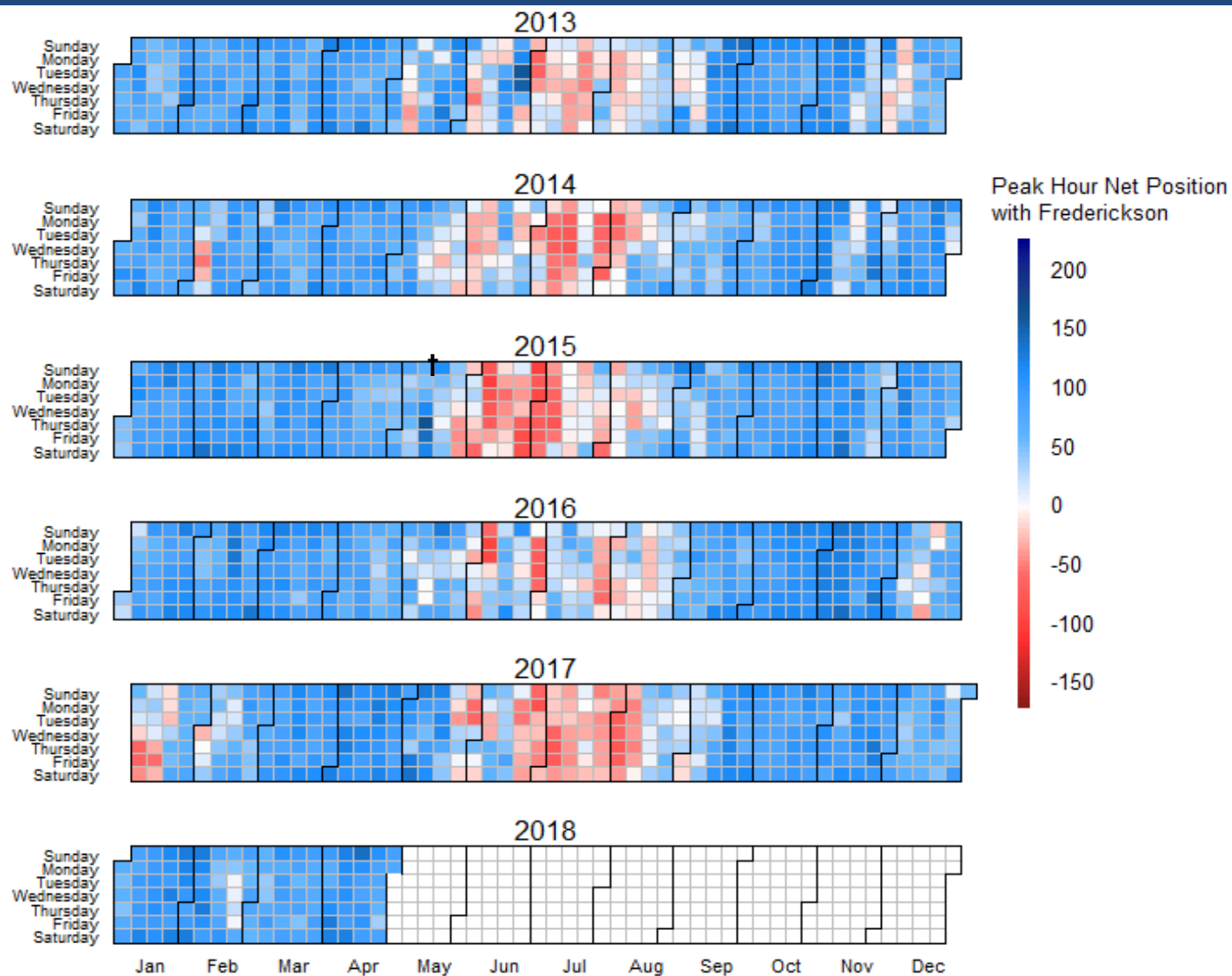
Block/Slice Generation observed over the last 3 years
 Frederickson available as energy call option through August 2022



Benton PUD Load/Resource Balance

Daily Peak Hour by Month

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Overview



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Initiative Measure No. 1631

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Ballot Title

Initiative Measure No. 1631 concerns pollution.

This measure would charge pollution fees on sources of greenhouse gas pollutants and use the revenue to reduce pollution, promote clean energy, and address climate impacts, under oversight of a public board.

Should this measure be enacted into law? Yes [] No []

Ballot Measure Summary

This measure would impose pollution fees on certain large emitters of greenhouse gas pollutants based on rules determining carbon content, starting in 2020. A public board would supervise spending the revenues on reducing pollution, promoting clean energy, and addressing climate impacts to the environment and communities. Utilities could receive credits for approved investments. Indian tribes would consult on projects directly impacting their land. There would be periodic reporting on the measure's effectiveness.

Initiative Overview

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- ▣ Pollution fee imposed on:
 - Fossil fuels sold or used within the state.
 - Electricity generated within or imported for consumption within the state.
- ▣ \$15/ton beginning Jan. 1, 2020.
 - Increases by \$2/ton per year plus inflation.
 - \$2/ton increases stop
 - once the state reaches its 2035 emissions goal, and
 - is on a trajectory to meet 2050 goal, only inflation thereafter.

Initiative Overview (continued)

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- ▣ For electricity, the fee obligation begins with the generator
 - Can be assumed by the purchaser (e.g., utility)
- ▣ As a federal entity, BPA cannot pay any fee
 - In-state purchasers (utilities) must assume the obligation
 - BPA to be assigned a default emission factor – unknown at this time
- ▣ Pollution fees put into special fund
 - Used for designated purposes
- ▣ Utilities may “retain” fees paid, if spent in accordance with a plan
 - Plan approved by:
 - Department of Commerce for Consumer Owned Utilities (COUs)
 - Utilities & Transportation Committee for Investor Owned Utilities (IOUs)

Initiative Exemptions

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- ▣ Coal transition power (Centralia)
- ▣ Coal closure facility (e.g. Colstrip 1 & 2)
- ▣ Energy-intensive trade exposed (EITE) facilities
- ▣ Aircraft and maritime fuels.
- ▣ Diesel, biodiesel or aircraft fuels used for agriculture purposes.
- ▣ Other

Credits for Pollution Fees Paid

Utility Retained Fees



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Utility Retained Pollution Fees

Opportunity to Claim Credit

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- Utility may claim credit for up to 100% of pollution fees paid
- Subject to development of a Clean Energy Investment Plan (CEIP)
 - ▣ Must be approved by the Department of Commerce (for public utilities)
 - In meaningful collaboration with the Board/Panels
 - ▣ Credits must be reinvested in eligible projects
 - *Investments must be in addition to existing programs and expenditures necessary to meet emission reduction or conservation requirements*
 - ▣ Must describe a long-term strategy to eliminate any fee obligation on electricity and minimize any fee obligation on natural gas
 - ▣ Must submit annual reports, and update plan every two years

Initiative Governance: Public Oversight Board

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- ▣ Establishes a Public Oversight Board in the Governor's Office
 - 15 Voting members
 - No dedicated utility representative
- ▣ Mandatory consultation with Advisory Panels

Initiative Governance: Advisory Panels

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▣ Clean Air and Clean Energy:

- 9 members, representing tribal, environmental, business, labor and Pollution Health Areas (PHAs), expertise in carbon reduction.
- Co-chaired by 1 business interest, 1 representing statewide labor.

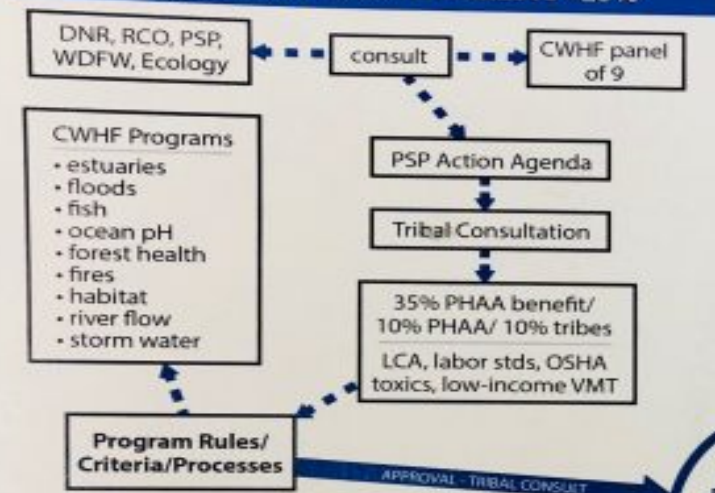
▣ Clean Water and Healthy Forests:

- No more than 9 members, represent tribal, environmental, business, labor and PHAs.
- Co-chaired by 1 Tribal leader, 1 representing statewide environmental interests.

▣ Economic and Environmental Justice:

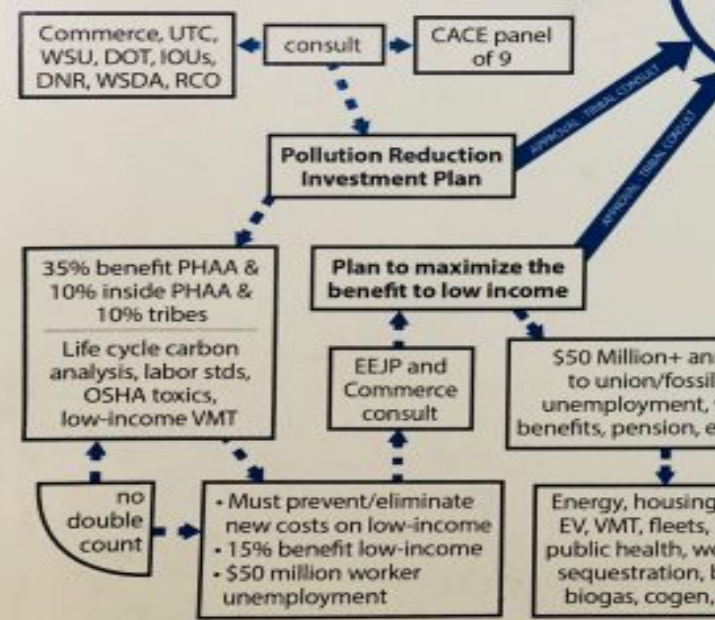
- 2 labor members.
- 5 other members, of which at least 1 is Tribal leader, and at least 2 are non-Tribal leaders representing PHAs.
- Co-chaired by 1 Tribal leader, 1 representing PHAs that are not tribal.

CLEAN WATER & HEALTHY FORESTS - 25%

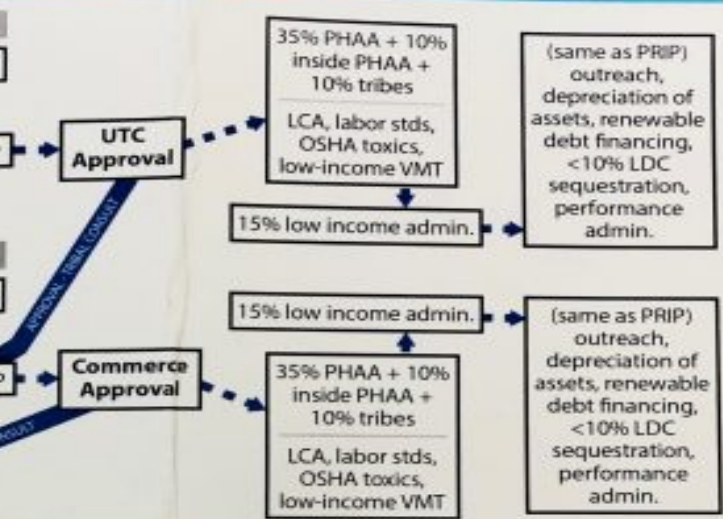
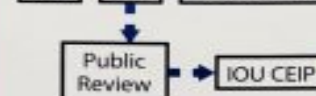


PUBLIC OVERSIGHT BOARD (POB)

14 unelected appointees housed in the office of the Governor from labor unions, tribal governments, social justice and environmentalist groups, and one business



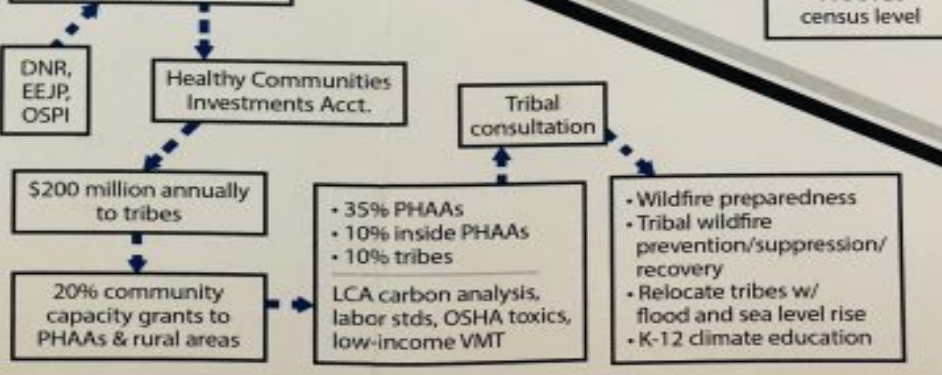
CONSULT



CUMULATIVE IMPACTS ANALYSIS 7/31/19

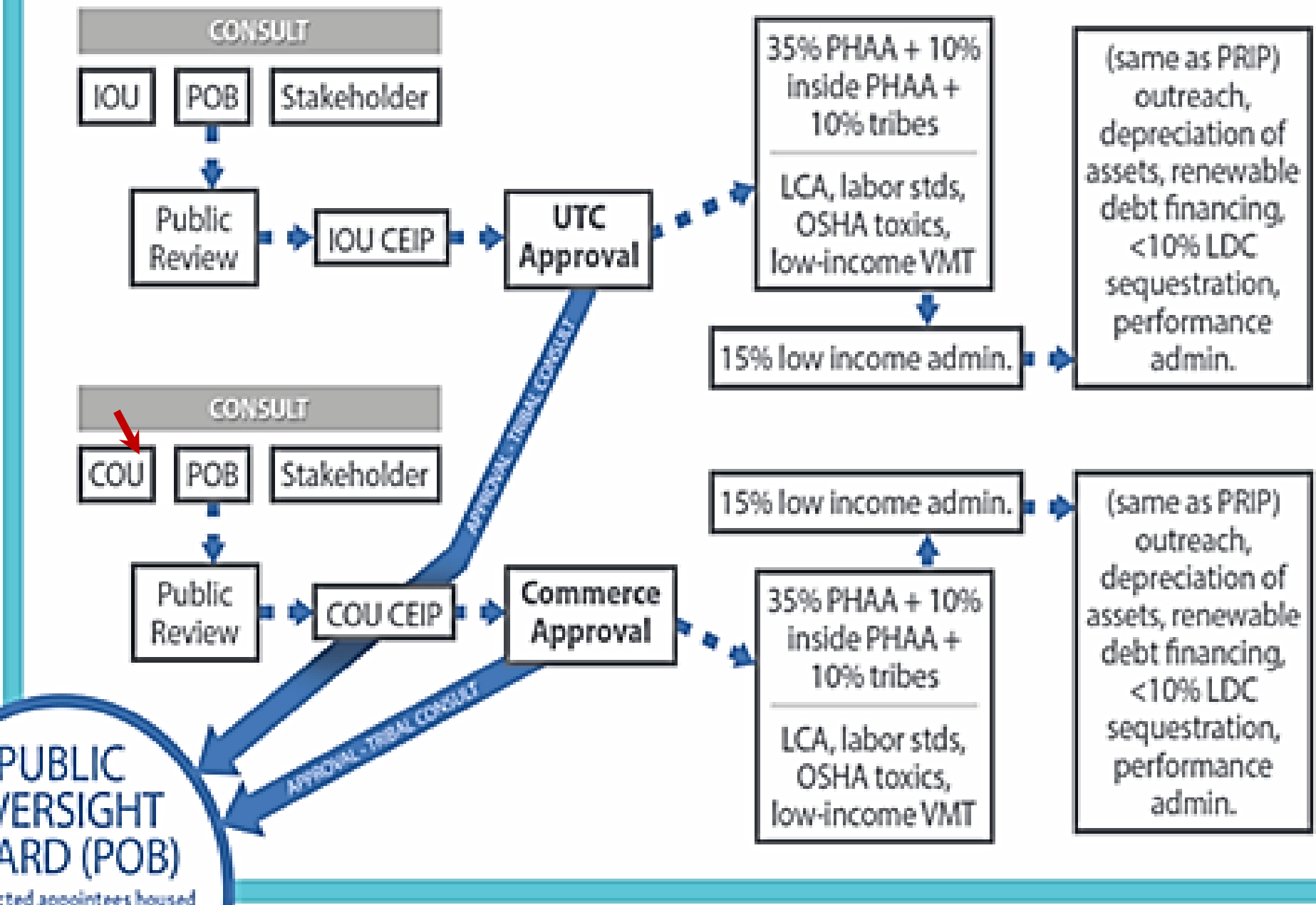


Criteria/Rules/Processes



HEALTHY COMMUNITIES INVESTMENTS - 5%

CREDITED: Out of State Payments & Utilities (IOU & COU) *Utility Retained Fees*



Financial Impacts

Pollution Fees & Other Economic Impacts

1. **BPA Market Purchases**
2. **Benton PUD Market Purchases**
3. **Frederickson Operations**
4. **Secondary Market Sales**



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Financial Impacts

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- ☐ Financial impact areas
 - 1) BPA Market Purchases
 - 2) Benton PUD Market Purchases
 - 3) Operation of Frederickson
 - 4) Secondary Market Sales
 - Benton PUD's Sales
 - BPA's Sales
- ☐ Impacts include:
 - Pollution fees paid
 - Other economic impacts

Uncertainty

Relative to Financial Impacts

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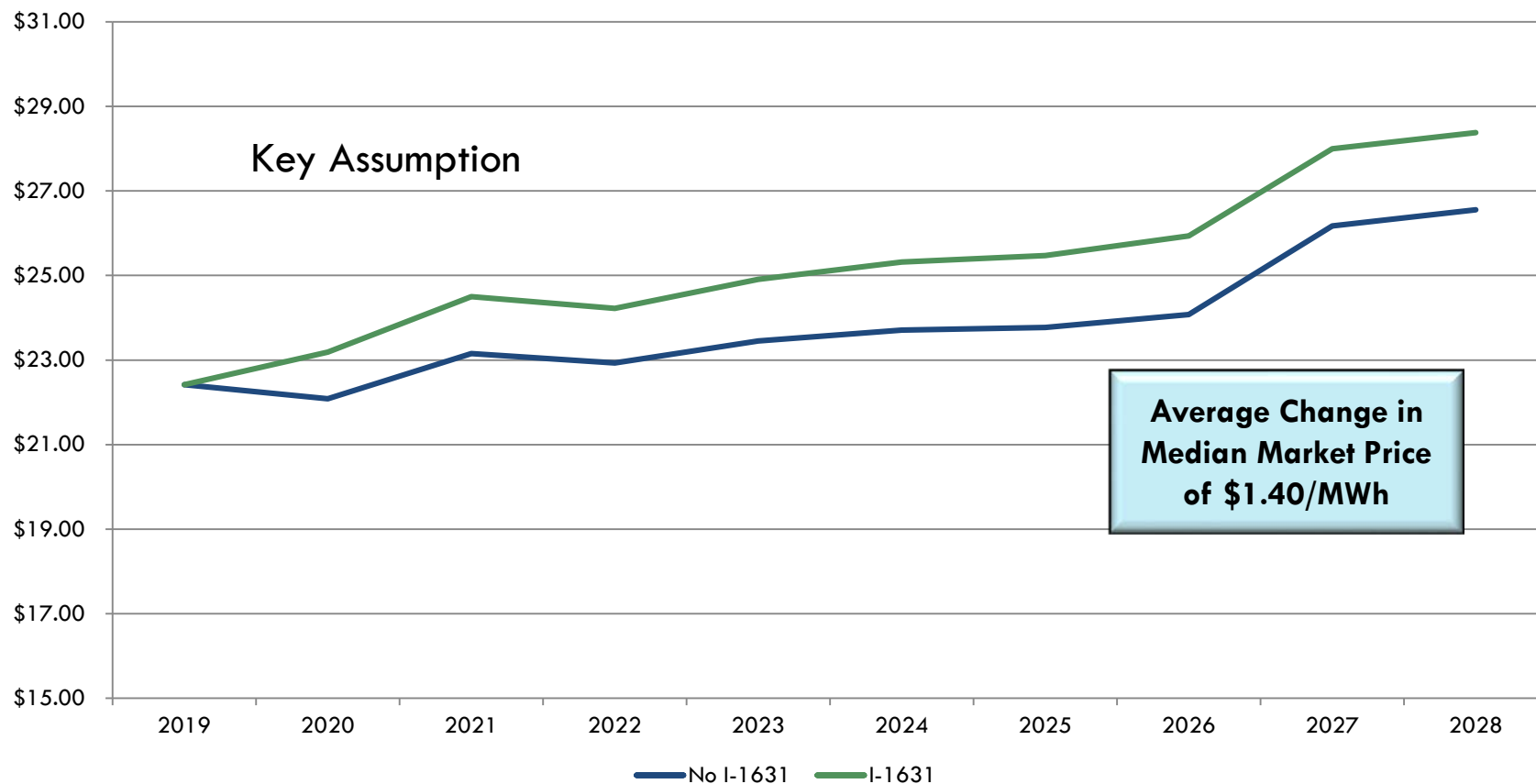
- Benton PUD required to make key assumptions for analysis
 - ▣ Default emission factors deferred to rulemaking
 - BPA market purchases
 - Benton PUD unspecified market purchases
 - ▣ Impacts on market prices
 - ▣ Impacts on the dispatch of Frederickson power plant
- Focus is on years 2020-2022
 - ▣ Greater uncertainty in out years

Estimated Impact on Secondary Market Prices

Affects Both Purchases & Sales

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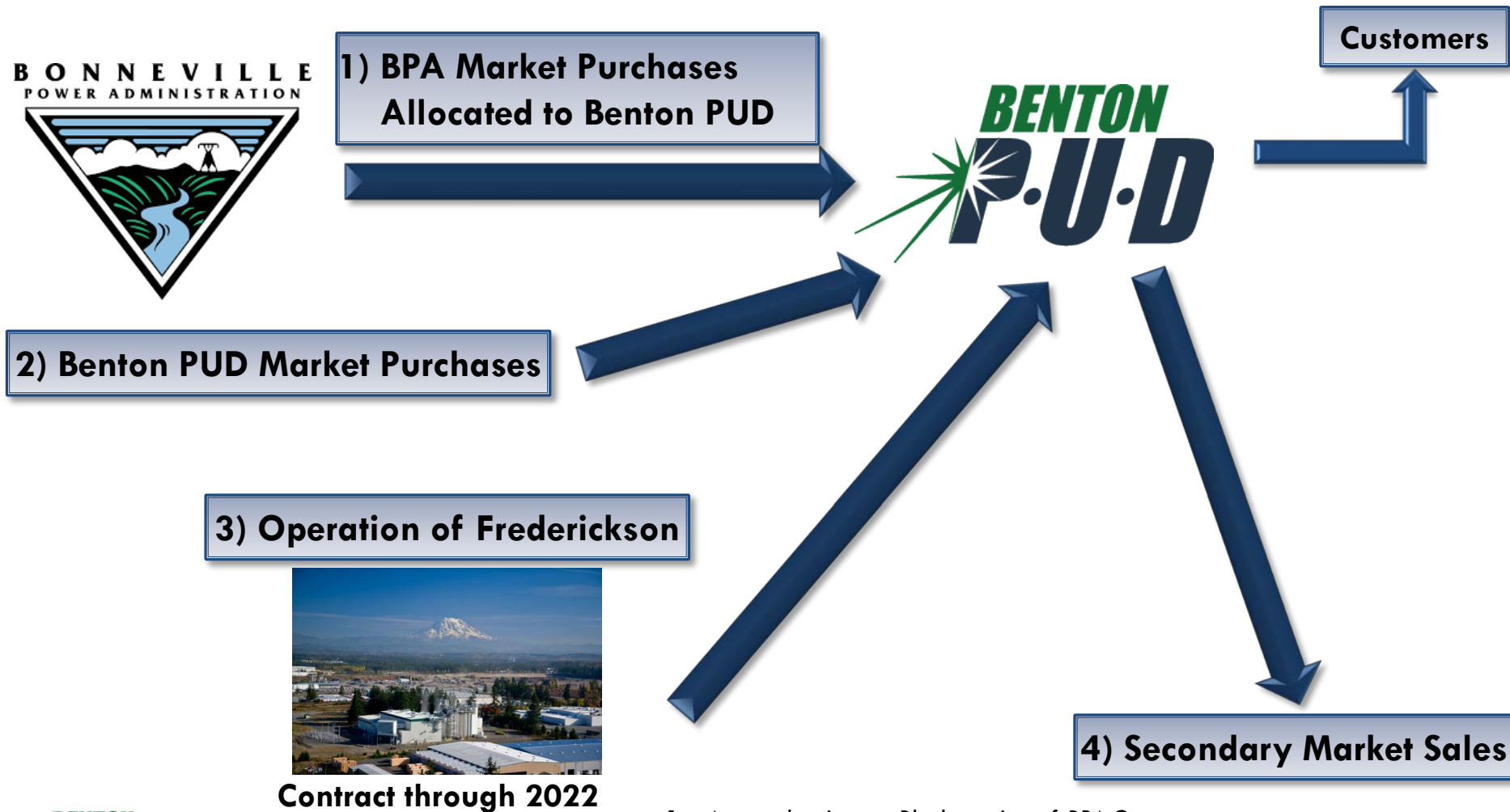
Mid-C Annual Average Market Price



Source: TEA Aurora Modeling

Impact Areas

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1 – Assumed to impact Block portion of BPA Contract

Financial Impacts

Pollution Fees & Other Economic Impacts

1. **BPA Market Purchases**
2. Benton PUD Market Purchases
3. Frederickson Operations
4. Secondary Market Sales



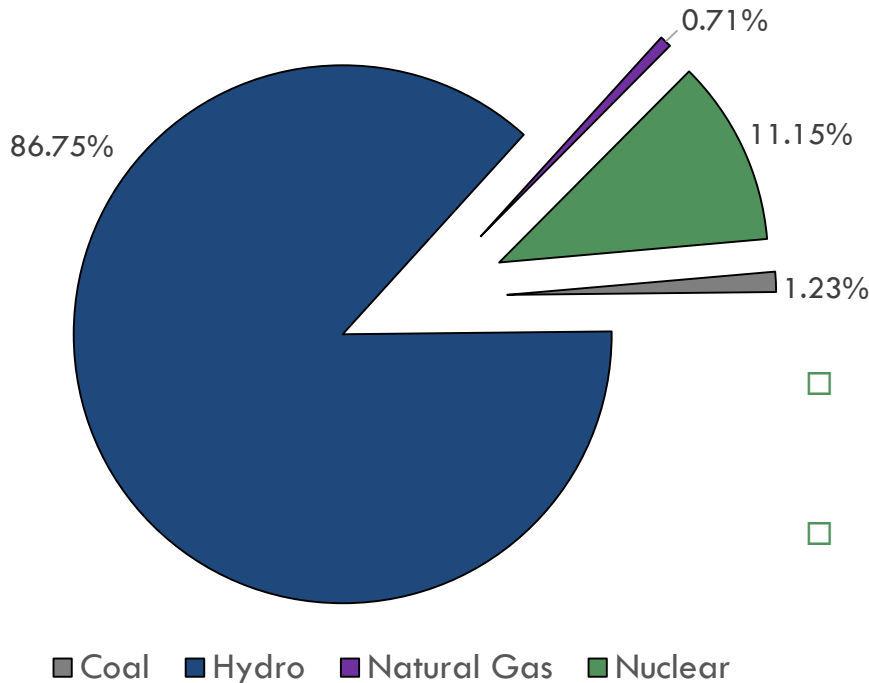
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1) BPA Market Purchases

Overview

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BPA Fuel Mix (by percentage)



- BPA's portfolio is predominantly hydro
 - ▣ Some market purchases throughout the year
- BPA tracks their carbon emissions factor
 - ▣ Registered with the California Air Resources Board as an Asset Controlling Supplier (ACS).
 - ▣ Very low emissions factor due to hydro and nuclear
- BPA is $\approx 90\%$ of Benton PUD power purchases
 - ▣ Benton PUD assumes a proportional share of the resources in BPA's portfolio
 - ▣ Assumes a proportional share of BPA's carbon content

1) BPA Market Purchases

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BPA Purchases - I-1631 Impacts			
	2020	2021	2022
Block Purchases (aMW) ¹	101.92	101.92	101.92
Estimated Emission Factor ²	0.024	0.024	0.024
Carbon Fee	\$15.00	\$17.30	\$19.65
Estimated Carbon Cost	\$321,415	\$370,699	\$420,968

1 - Block Purchases subject to BPA Market Purchases

2 - Metric tons/MWh based on doubling CARB ACS designation since designation based on entire BPA portfolio

Key Assumptions

- Applies to Block contract only
- BPA emission factor based on California Air Resources Board
 - ▣ We doubled the emissions factor due to application to Block only
- No other adjustments for Washington in-state generators
 - ▣ Fee paid only once – have generators already paid the fee?
 - ▣ Transition coal and coal closure facility emissions exempt from pollution fee

Financial Impacts

Pollution Fees & Other Economic Impacts

1. BPA Market Purchases
2. **Benton PUD Market Purchases**
3. Frederickson Operations
4. Secondary Market Sales



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2) Benton PUD Market Purchases

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□ Uncertainty surrounding emission factor for unspecified purchases

NEW SECTION. **Sec. 8. POLLUTION FEE.** (1) A pollution fee is imposed on and must be collected from large emitters based on the carbon content of:

(a) Fossil fuels sold or used within this state; and

(b) Electricity generated within or imported for consumption in the state.

(2) The fee must be levied only once on a particular unit of fossil fuels or electricity.

(3) Beginning January 1, 2020, the pollution fee on large emitters is equal to fifteen dollars per metric ton of carbon content. Beginning January 1, 2021, the pollution fee on large emitters increases by two dollars per metric ton of carbon content

(5) For the generation or import of electricity from an unspecified source, the department of ecology, in consultation with the department of commerce, must select a default emission factor that maximizes the incentive for light and power businesses to specify power sources without also unduly burdening the ability to purchase electricity from the market.

2) Benton PUD Market Purchases

Scenario 1 – Higher market price only, all purchases “specified”

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	2020	2021	2022
Market Purchases -Baseline	\$5,954,690	\$6,117,603	\$6,211,114
Market Purchases - Initiative	\$6,175,607	\$6,389,973	\$6,528,282
Incremental Cost - Impact of I-1631	\$220,917	\$272,370	\$317,168

- Key assumptions for this scenario:
 - ▣ District is able to specify the source of all purchases
 - ▣ Pollution fee paid by generator and embedded in market price
 - ▣ Higher market price, but no pollution fee paid by District
 - ▣ Utility avoids pollution fee, but not the economic impact of higher prices
 - ▣ As such, Unspecified Source Default Emission Factor not applicable

2) Benton PUD Market Purchases

Scenario 2 – Higher market price + 38% of market purchases “unspecified”

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Natural Gas Plant Emissions Factor	2020	2021	2022
Incremental Cost - Market Purchases	\$220,917	\$272,370	\$317,168
Purchases (aMW) ¹	22.198	22.198	22.198
Unspecified Source % ²	38%	38%	38%
Emission Factor ³	0.437	0.437	0.437
Carbon Fee \$/MT	\$15.00	\$17.30	\$19.65
Total Pollution Fee	\$484,365	\$558,635	\$634,390
Total Impact⁴	\$705,282	\$831,005	\$951,558

Note:

1 - Average Market Purchases from 2012-2017

2 - % of Market Purchases from unknown resources based on Point of Receipt in 2017

3 - Metric tons/MWh embedded in market product; published in SB-6203

4 - Incremental cost of market purchase; Cost of not specifying source of power

Coal Plant Emissions Factor	2020	2021	2022
Incremental Cost - Market Purchases	\$220,917	\$272,370	\$317,168
Purchases (aMW) ¹	22.198	22.198	22.198
Unspecified Source % ²	38%	38%	38%
Emission Factor ³	1.000	1.000	1.000
Carbon Fee \$/MT	\$15.00	\$17.30	\$19.65
Total Pollution Fee	\$1,108,388	\$1,278,341	\$1,451,692
Total Impact⁴	\$1,329,305	\$1,550,711	\$1,768,861

Note:

1 - Average Market Purchases from 2012-2017

2 - % of Market Purchases from unknown resources based on Point of Receipt in 2017

3 - Metric tons/MWh embedded in market product; based on a coal plant emissions

4 - Incremental cost of market purchase; Cost of not specifying source of power

□ Key assumption for this scenario:

- ▣ District unable to specify the source of 38% of purchases
- ▣ Default Emission Factor applicable
 - Emission factor deferred to rulemaking, so we show two assumptions
- ▣ Pollution fee paid by generator and embedded in market price

Financial Impacts

Pollution Fees & Other Economic Impacts

1. BPA Market Purchases
2. Benton PUD Market Purchases
3. **Frederickson Operations**
4. Secondary Market Sales





Frederickson Combined Cycle Combustion Turbine

Overview

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Jointly Dispatched by:



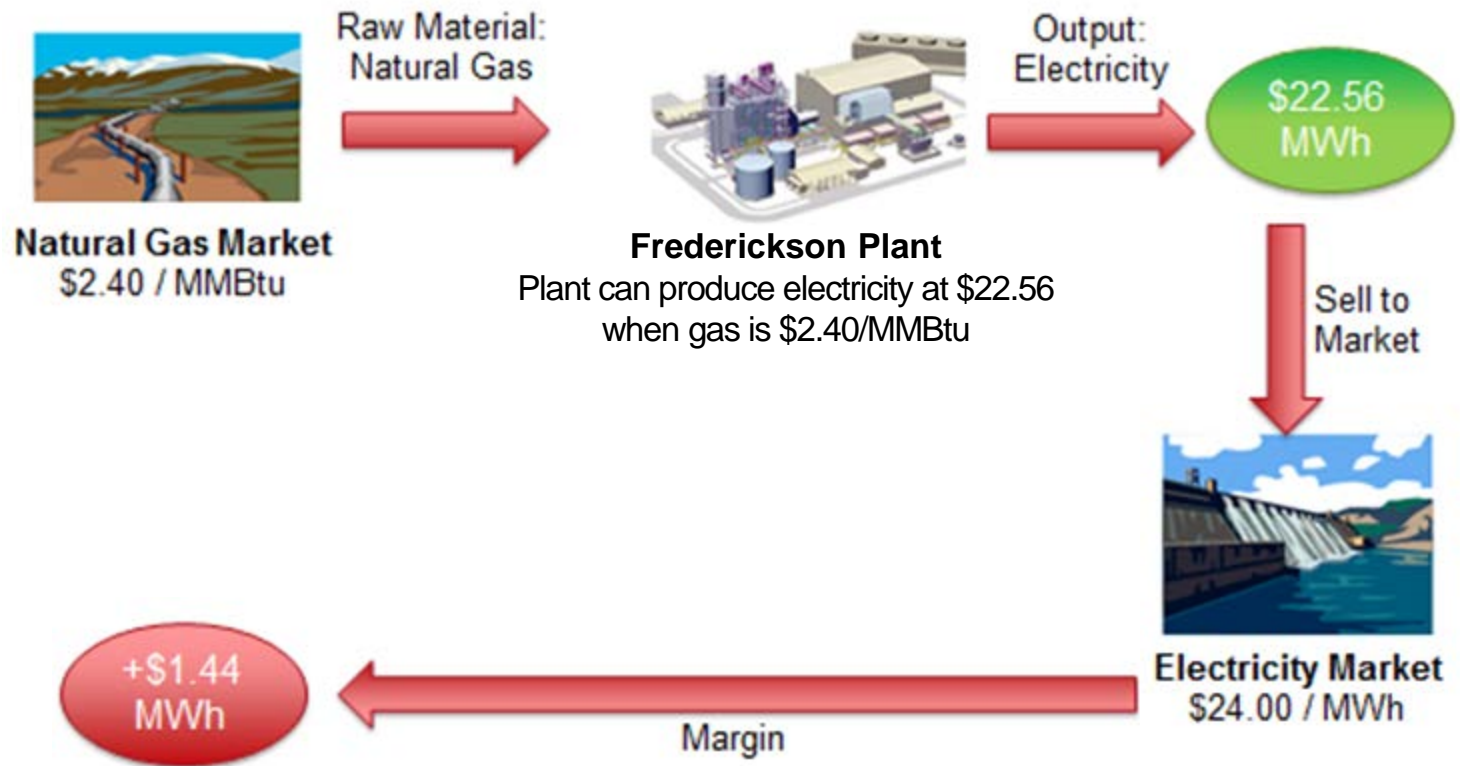
Jointly Owned by:



Resource	Generation Capacity	Notes
Total	249 MW	
Benton Contract Information		
BPUD 20% Ownership	50 MW	PPA expires Aug 2022
Not designated as a "resource" used to serve retail load in BPA contract. Expected resource output designated in contract.		

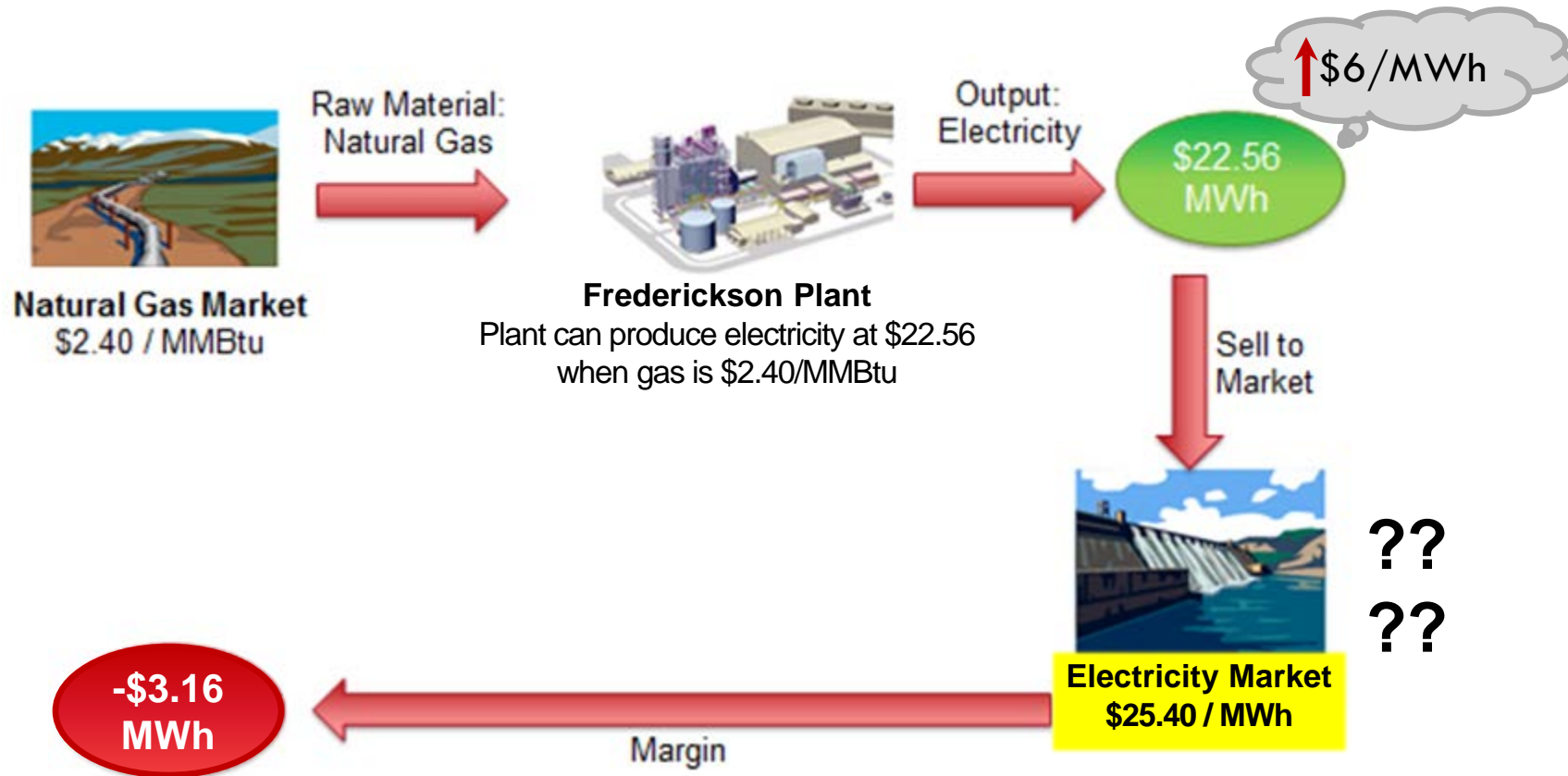
3) Operation of Frederickson *Simplified Example Today (Baseline)*

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3) Operation of Frederickson *Simplified Example if Initiative Passes*

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Conclusion: Plant will dispatch less



3) Operation of Frederickson

Impacts

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Frederickson Fixed Cost Recovery - Baseline			
	2020	2021	2022
Net Secondary Revenue	\$1,833,653	\$2,359,627	\$1,037,240
Less: Pollution Fees	\$0	\$0	\$0
Fixed Cost Recovery	\$1,833,653	\$2,359,627	\$1,037,240

Frederickson Fixed Cost Recovery - I-1631			
	2020	2021	2022
Net Secondary Revenue	\$980,989	\$1,134,462	\$389,949
Less: Pollution Fees	-\$657,752	-\$757,799	-\$289,728
Fixed Cost Recovery	\$323,236	\$376,663	\$100,221

Net Impact of I-1631	\$1,510,416	\$1,982,964	\$937,019
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Financial Impacts

Pollution Fees & Other Economic Impacts

1. BPA Market Purchases
2. Benton PUD Market Purchases
3. Frederickson Operations
4. **Secondary Market Sales**



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4) Secondary Market Sales

Benton PUD & BPA

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- ❑ Pollution Fee embedded in a higher market price
- ❑ Benton PUD is a “net seller” into the market
- ❑ Benton PUD’s secondary market sales increase in value

	2020	2021	2022
Secondary Market Sales - Baseline	\$10,123,641	\$10,412,146	\$10,291,076
Secondary Market Sales - Initiative	\$10,815,648	\$11,233,785	\$11,159,842
Incremental Revenue - Impact of I-1631	\$692,006	\$821,639	\$868,765

- ❑ Similarly, BPA’s secondary market sales increase in value

▣ Annual benefit to Benton PUD

Estimated BPA Rate Reduction	0.80%
Benton PUD Block Purchases Cost (2020)	\$39,708,067
Estimated Benton PUD Annual Benefit	\$318,558

Impacts of Initiative 1631

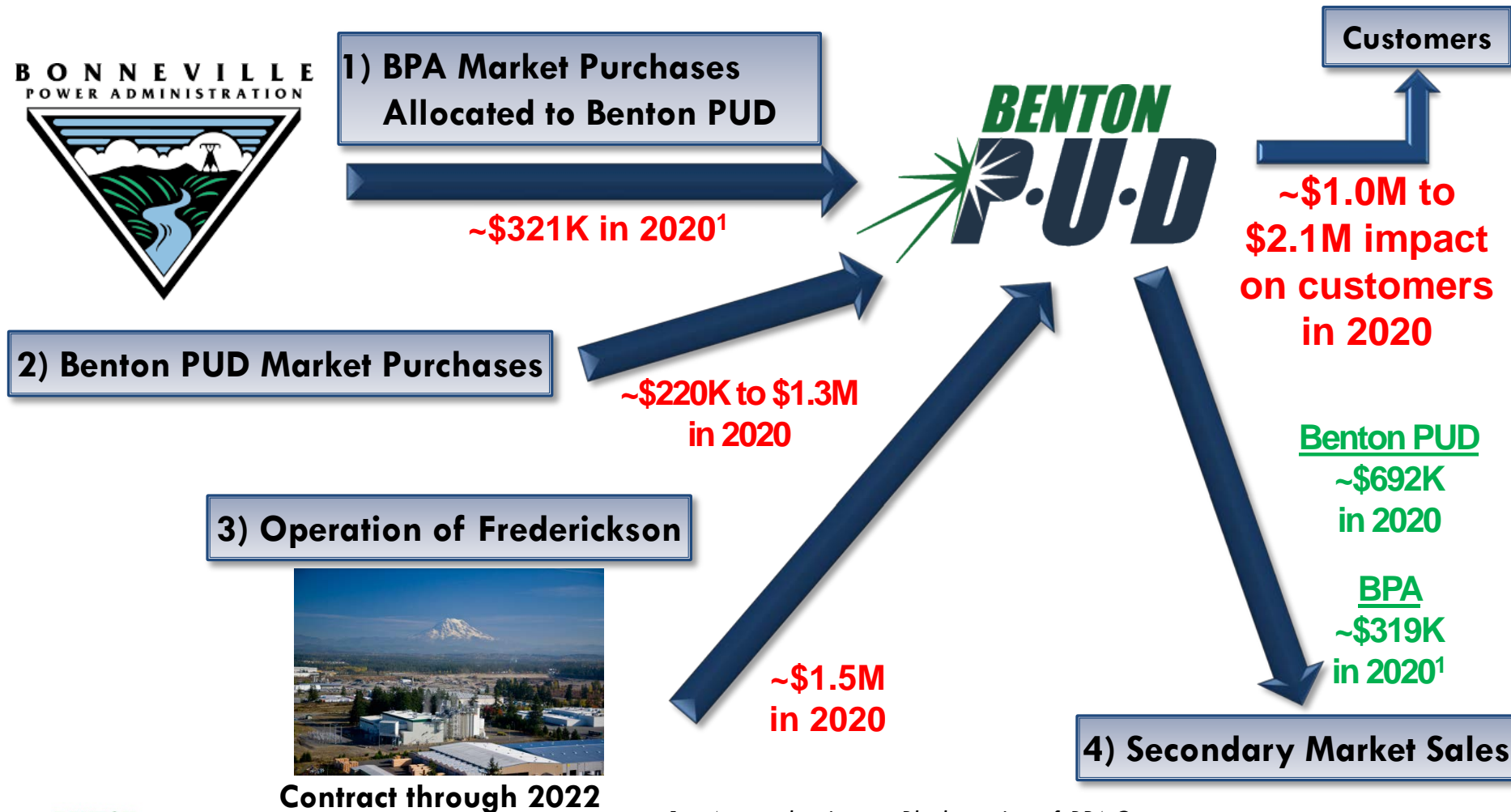
Financial Impact Summary



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Impact Areas

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1 – Assumed to impact Block portion of BPA Contract



Economic Impact Summary

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Scenario 1 - No Unspecified Purchases	2020	2021	2022
Pollution Fees Paid	\$979,167	\$1,128,498	\$710,696
Frederickson Operations	\$852,664	\$1,225,165	\$647,291
Net Secondary Market Purchases and Sales	(\$789,648)	(\$867,827)	(\$870,155)
Net Economic Impact	\$1,042,183	\$1,485,835	\$487,831

Scenario 2 - Coal Plant Emissions Factor	2020	2021	2022
Pollution Fees Paid	\$2,087,555	\$2,406,838	\$2,162,388
Frederickson Operations	\$852,664	\$1,225,165	\$647,291
Net Secondary Market Purchases and Sales	(\$789,648)	(\$867,827)	(\$870,155)
Net Economic Impact	\$2,150,571	\$2,764,176	\$1,939,524

Carbon & The Electric Sector



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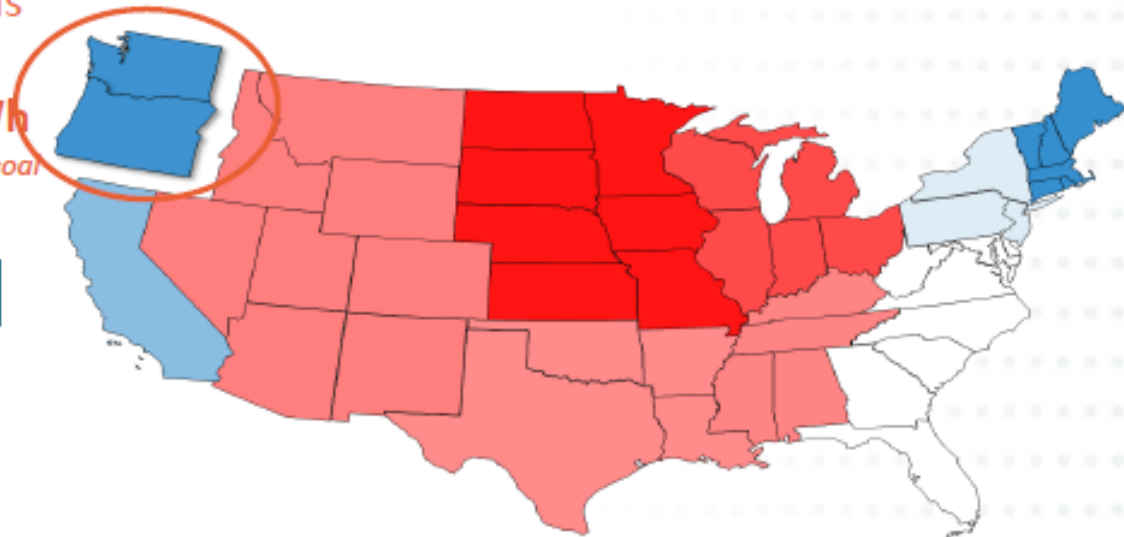
Carbon Intensity of the Northwest's Electricity Sector is Relatively Low

Context

- + Due to large fleet of existing zero-carbon resources, electric emissions intensity in the Pacific Northwest is already below other regions in the United States

2013 Regional GHG Intensity of Electricity Supply (tons/MWh)

2013 emissions
intensity:
0.26 tons/MWh
(includes out-of-state coal
resources)



WA/OR Generation Mix

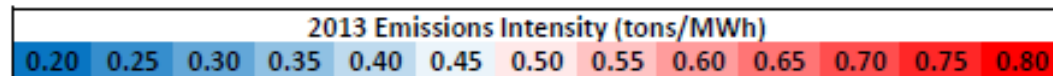
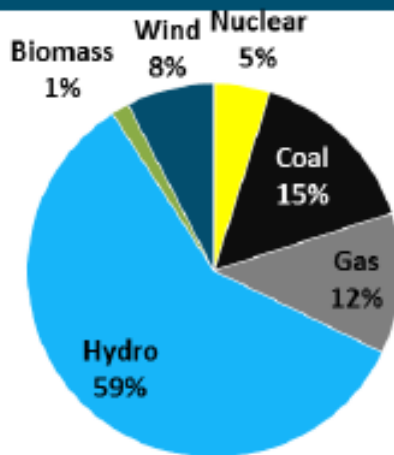
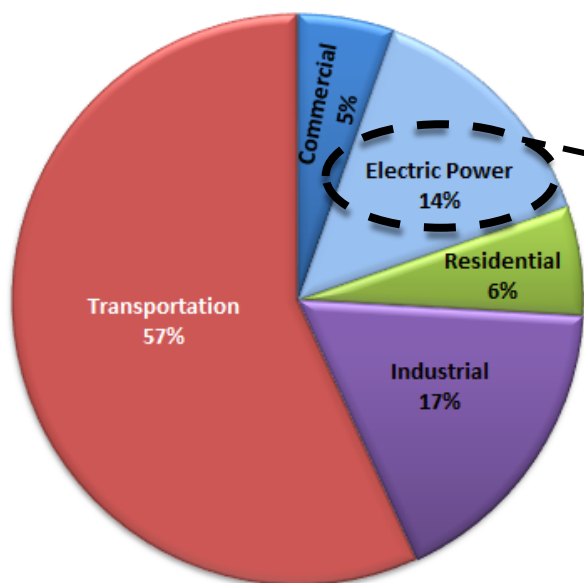


Figure developed using data gathered from state 2013 GHG inventories for Washington, Oregon, and California; supplemented with data from EIA Annual Energy Outlook 2016

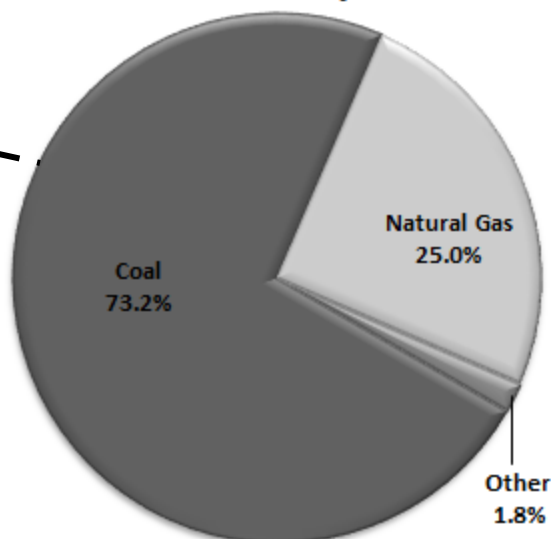
Washington & Benton PUD Emissions

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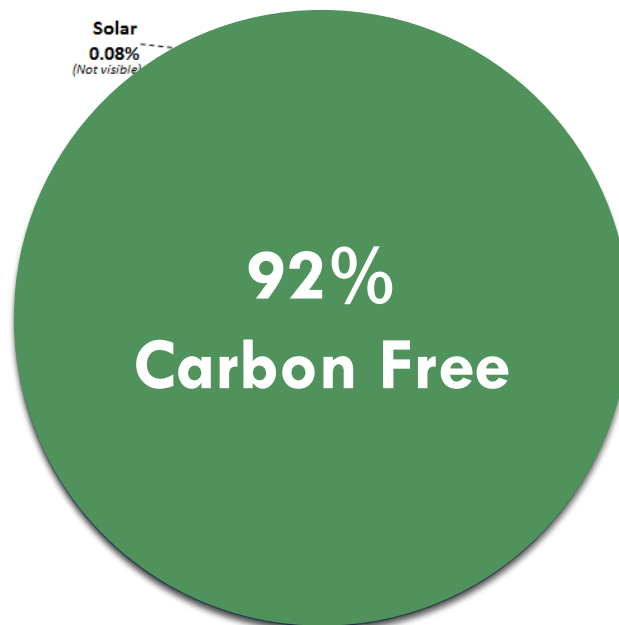
**Washington State
CO₂ Emissions by Sector**



**Electric Power
Emissions by Fuel**



Benton PUD: Fuel Mix



Source: U.S. Energy Information Administration,
2015 State Energy Data System and EIA
calculations made for this analysis.
[http://www.eia.gov/environment/emissions/state/
excel/sectors.xlsx](http://www.eia.gov/environment/emissions/state/excel/sectors.xlsx)

Source: Washington State Electric Utility Fuel Mix
Disclosure Reports for Calendar Year 2016
[http://www.commerce.wa.gov/wp-
content/uploads/2017/10/Energy-Fuel-Mix-
Disclosure-2016.pdf](http://www.commerce.wa.gov/wp-content/uploads/2017/10/Energy-Fuel-Mix-Disclosure-2016.pdf)

Pacific Northwest Low Carbon Scenario Analysis

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Pacific Northwest Low Carbon Scenario Analysis

Achieving Least-Cost Carbon Emissions Reductions in the Electricity Sector

December 2017



Energy+Environmental Economics

Sponsored by Public Generating Pool



Pacific Northwest Low Carbon Scenario Analysis

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Pacific Northwest Low Carbon Scenario Analysis

Achieving Least-Cost Carbon Emissions Reductions in the Electricity Sector

December 2017



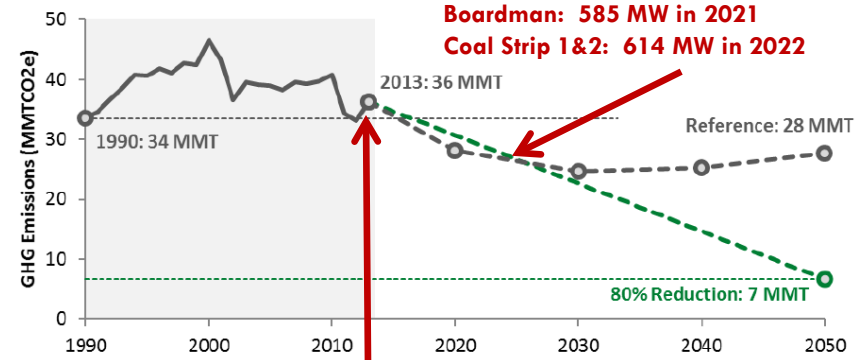
Energy+Environmental Economics

STUDY MOTIVATION

- Deep de-carbonization goals have been proposed in both Washington and Oregon
- **80% reduction** below 1990 levels by 2050

Figure v. Emissions trajectory for the Reference Case

Planned Coal Retirements: ≈ 14 MMT
Centralia 1&2: 1,340 MW in 2020 & 2025
Boardman: 585 MW in 2021
Coal Strip 1&2: 614 MW in 2022



WA Electric Sector ≈ 18 MMT
Varies significantly due to hydro power

Pacific Northwest Low Carbon Scenario Analysis

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Pacific Northwest Low Carbon Scenario Analysis

Achieving Least-Cost Carbon Emissions Reductions in the Electricity Sector

December 2017



Energy+Environmental Economics

STUDY MOTIVATION

- De-carbonization goals are **ambitious**
- Explores how NW Region's **electric sector** could most **effectively and efficiently** contribute to the achievement of emissions reduction goals

Pacific Northwest Low Carbon Scenario Analysis

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Pacific Northwest Low Carbon Scenario Analysis

Achieving Least-Cost Carbon Emissions Reductions in the Electricity Sector

December 2017



Energy+Environmental Economics

KEY FINDINGS

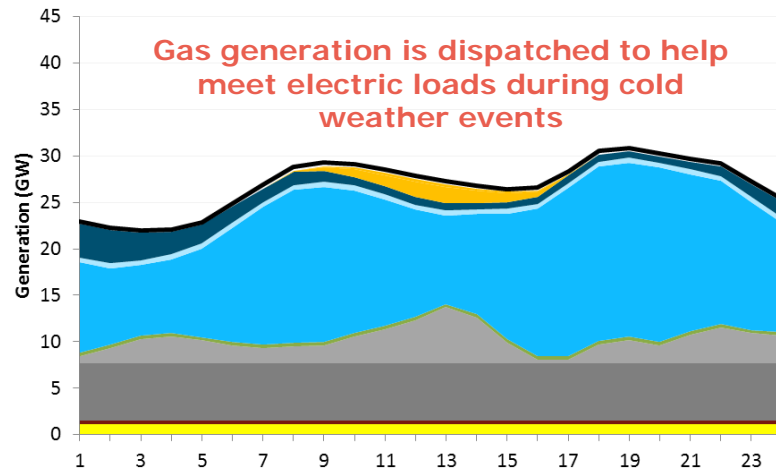
- The most cost-effective opportunity for reducing electricity sector carbon in the Northwest is to displace coal generation with a combination of energy efficiency, renewables and natural gas.
- If carbon reduction is the goal, implement an economy-wide price on carbon rather than technology specific mandates.
 - ✓ Do not implement renewable portfolio standards
 - ✓ Do not prohibit fossil fuel based technology
 - Natural gas fired generation produces emissions at less than half the rate of coal-fired and is needed for power grid reliability



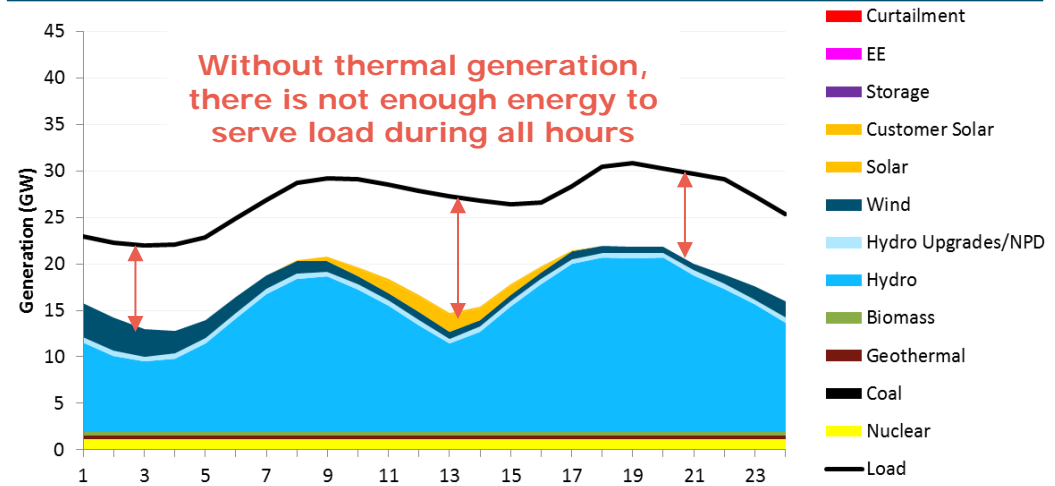
Natural gas generation will still be needed for reliability and is a good complement to hydro/wind/solar

Context

Cold Winter Day under 80% Reduction



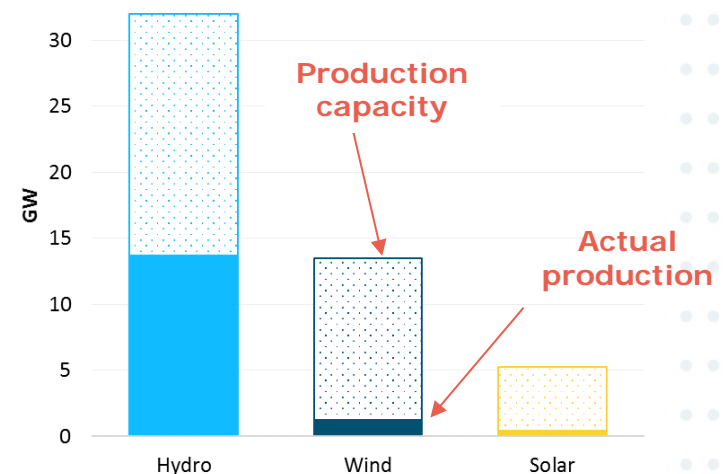
Cold Winter Day Without Gas



- + Most challenging conditions for the Northwest power system are multi-day cold snaps that occur during drought years
- + Wind and solar production tends to be very low during these conditions

Absent a technology breakthrough, gas generation will continue to be needed for reliability

Energy from Zero-Carbon Resources





2050 Portfolio Summary

Carbon Cap Scenarios

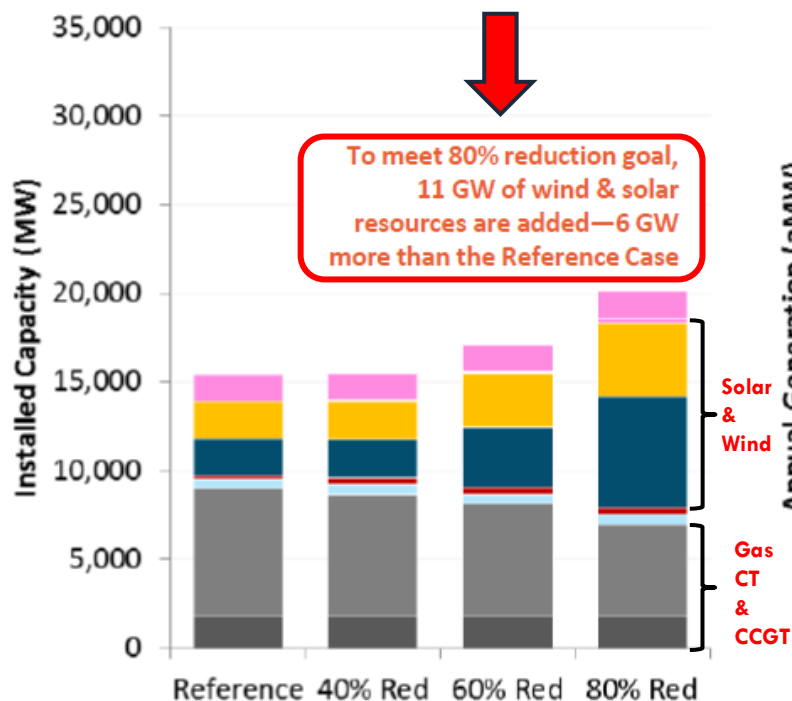
Context

Highlights

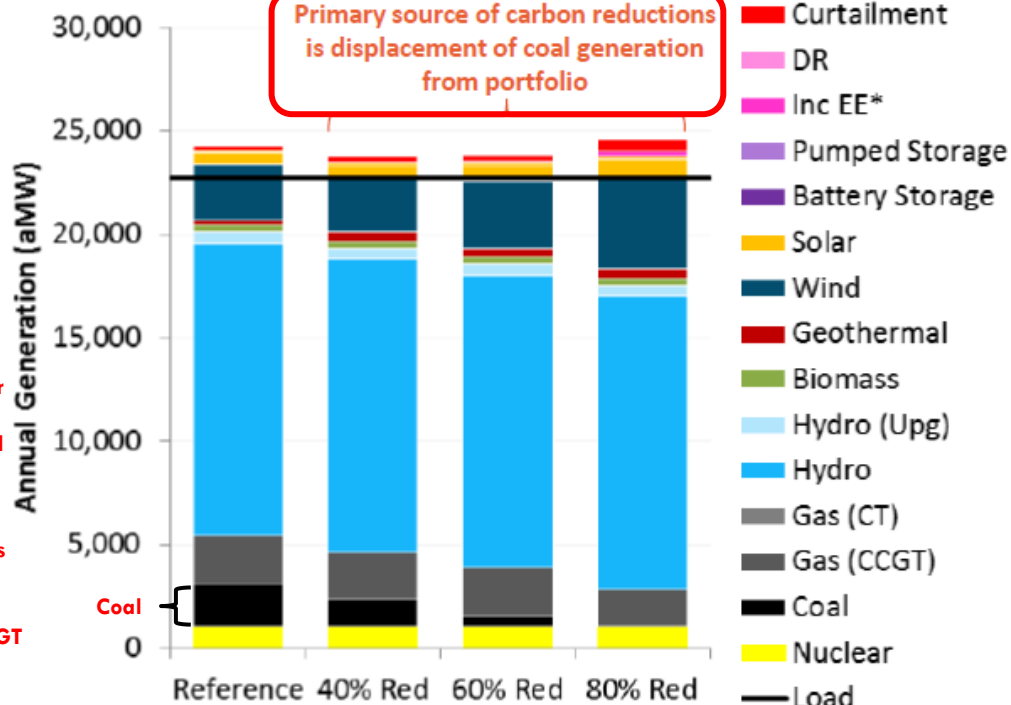
- Coal retired under 80% Case, replaced with renewables & gas
- 11 GW of new renewables by 2050
- 7 GW of new gas capacity added
- Gas capacity factor is 30% in 2050

Scenario	Inc Cost (\$MM/yr.)	GHG Reductions (MMT)	Effective RPS %	Zero CO2 %
Reference	—	—	20%	91%
40% Reduction	+\$163	7.5	21%	92%
60% Reduction	+\$434	14.2	25%	95%
80% Reduction	+\$1,046	20.9	31%	102%

Resources Added (MW)



Energy Balance (aMW)



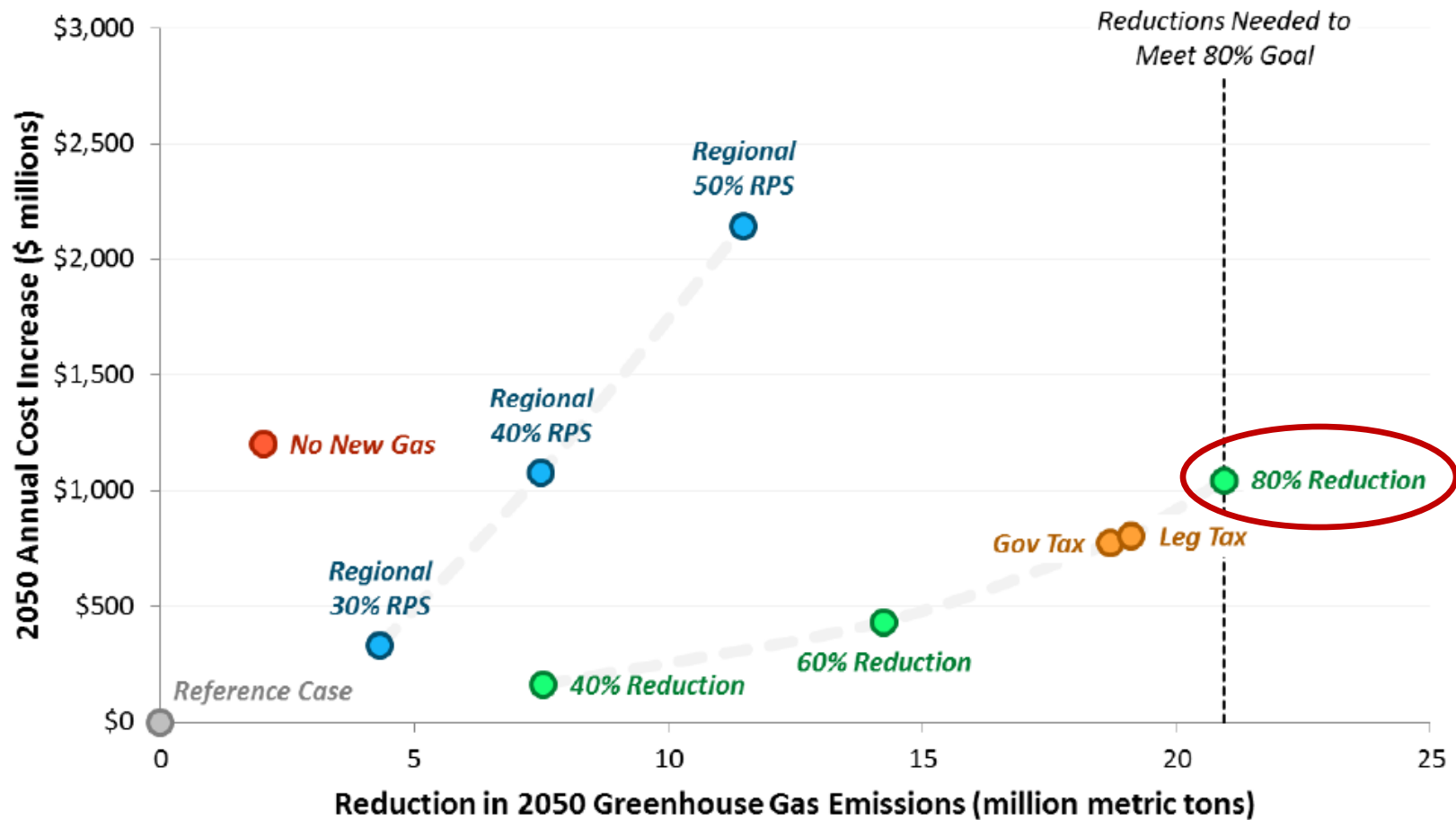
* EE shown here is incremental to efficiency included in load forecast (based on NWPCC 7th Plan)



Cost & Emissions Impacts

All Cases

Context



Note: Reference Case reflects current industry trends and state policies, including Oregon's 50% RPS goal for IOUs and Washington's 15% RPS for large utilities

Pacific Northwest Low Carbon Scenario Analysis

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Pacific Northwest Low Carbon Scenario Analysis

Achieving Least-Cost Carbon Emissions Reductions in the Electricity Sector

December 2017



Energy+Environmental Economics

KEY FINDINGS

- Returning revenues raised under a carbon pricing policy to the electricity sector is crucial to mitigate higher costs

I-631 Carbon Reduction Requirements

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2018 Integrated Resource Plan



Public Utility District No. 1 of Benton County

PREPARED IN COLLABORATION WITH



Resolution No. 2468



Integrated Resource Planning required by WA state law

10 year minimum planning horizon

Updated every 4 years

Assessment of commercially available, utility scale renewable and nonrenewable generating technologies...
...using "**lowest reasonable cost**" as a criterion
...must consider resource dispatchability, resource effect on system operation, the risks imposed on the utility and its ratepayers...

I-1631 Allows Utilities to Retain Pollution Fees; with conditions:

To receive approval, the clean energy investment plan (CEIP) must:

"Describe a long-term strategy to **eliminate any fee obligation** imposed by this chapter on electricity..."

- Eliminating fee is interpreted as meaning **no natural gas fired electricity** can be in future plans.
 - Contradicts recommendations of the Pacific Northwest Low Carbon Scenario Analysis
- **What is long-term** and how will the CEIP harmonize with existing integrated resource planning?
- Utilities may **forgo retaining I-1631 pollution fees**...disconnect between CEIP requirements & least cost approach of IRP.



Impacts of Initiative 1631

Staff Observations



American Public Power Association

Staff Observations

I-1631

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- Financial Impacts
 - ▣ Uncertainty due to subsequent rule making (assumptions made)
 - ▣ Pollution fees paid are not the only economic impacts
 - ▣ Estimated economic impact 2020 – 2022: \$3.0M - \$6.9M total for three years
- Credit for Pollution Fees Paid
 - ▣ Complex structure to access Utility Retained Fees
 - ▣ CEIP consultation with Board & Panels – Approval by Commerce
 - ▣ Erosion of key Public Power Principle : Local Control
- Carbon Reduction in the Electric Sector
 - ▣ Coal plants are chief emissions contributor - closures already planned
 - ▣ Displacing coal with natural gas and some amount of renewable resources is the most cost-effective, near-term carbon emissions reduction option