Integrated Program Review 2

March 2, 2021
<table>
<thead>
<tr>
<th>Time</th>
<th>Topic</th>
<th>Speaker</th>
</tr>
</thead>
<tbody>
<tr>
<td>1:00 – 1:10</td>
<td>Opening Comments/Discussion Objectives</td>
<td>Michelle Manary</td>
</tr>
<tr>
<td>1:10 – 3:00</td>
<td>Transmission Capital Program</td>
<td>Richard Shaheen/Jeff Cook/Mike Miller/Michelle Cathcart/Brad Wright/Nadine Coseo</td>
</tr>
<tr>
<td>3:00 – 3:15</td>
<td>CRSO EIS</td>
<td>Scott Armentrout</td>
</tr>
<tr>
<td>3:15 – 3:20</td>
<td>CRFM Studies</td>
<td>Jesse Kintz</td>
</tr>
<tr>
<td>3:20 – 4:00</td>
<td>Question and Answer</td>
<td></td>
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</tbody>
</table>
In September 2020, BPA published the Close Out Report for the 2022 Integrated Program Review. In it we cited the need to be flexible to changing economic conditions and that we planned to hold an Integrated Program Review 2 (IPR2).

BPA selected IPR2 topics based on known material changes and input from stakeholders. BPA believes, for the most part, the budgets we committed to in the 2022 IPR Close Out Report are still sufficient. Topics to be covered include:

– Transmission Capital Program (direct program and facilities)
– Fish and Wildlife budgets and support of the CRSO EIS programs
Transmission Capital Discussion Objectives

- Context

- Transmission Capital Program
  - Strategy
  - Execution & Performance
  - Special focus

- Budget
Transmission Capital Funding

$304,530

- Transmission Asset Category
- PFIA
- Other Asset Categories w/in T
- Transmission Indirects
- Corporate Indirects
- AFUDC

FY21 RC Numbers
Transmission Capital: Strategy
BPA Strategic Plan - SAMP – Asset Plan Alignment

**BPA Strategic Plan**

**SAMP:** Strategic Asset Management Plans (SAMP) convert the objectives of the organizational strategic plan and asset management policy into high-level, long-term action plans for the assets and asset systems, the asset portfolios or the asset management system.

**ASSET PLAN:** The Asset Plan (AP) is documented information that specifies the activities and resources and timescales required for individual assets, or groupings of assets, to achieve the organization’s asset management objectives.
# Historical & Future Capital Spend

<table>
<thead>
<tr>
<th>Program</th>
<th>Capital Expand (CapEx)</th>
<th>Actuals</th>
<th>Q1 Forecast</th>
<th>Rate Case</th>
<th>Future Fiscal Years</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Main Grid</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>$20,365</td>
<td>$11,135</td>
<td>$14,906</td>
<td>$5,588</td>
<td>$3,741</td>
</tr>
<tr>
<td><strong>PFIA</strong></td>
<td>$2,427</td>
<td>$5,197</td>
<td>$32,907</td>
<td>$57,201</td>
<td>$15,626</td>
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<tr>
<td><strong>Area and Customer service</strong></td>
<td>$79,252</td>
<td>$29,688</td>
<td>$35,307</td>
<td>$56,222</td>
<td>$21,164</td>
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<tr>
<td><strong>Upgrades &amp; Additions</strong></td>
<td>$99,959</td>
<td>$29,326</td>
<td>$21,383</td>
<td>$22,807</td>
<td>$36,779</td>
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<tr>
<td><strong>Total Capital Expand</strong></td>
<td>$202,003</td>
<td>$75,346</td>
<td>$104,502</td>
<td>$141,818</td>
<td>$77,310</td>
</tr>
<tr>
<td><strong>Capital Sustain</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Steel Lines</strong></td>
<td>$10,144</td>
<td>$13,793</td>
<td>$15,259</td>
<td>$13,242</td>
<td>$22,880</td>
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<tr>
<td><strong>Wood Lines</strong></td>
<td>$36,550</td>
<td>$46,459</td>
<td>$27,445</td>
<td>$26,893</td>
<td>$20,989</td>
</tr>
<tr>
<td><strong>PSC &amp; System Telecomm</strong></td>
<td>$31,309</td>
<td>$32,054</td>
<td>$23,412</td>
<td>$18,854</td>
<td>$12,570</td>
</tr>
<tr>
<td><strong>SPC</strong></td>
<td>$25,995</td>
<td>$17,341</td>
<td>$14,143</td>
<td>$12,125</td>
<td>$8,115</td>
</tr>
<tr>
<td><strong>Subs AC</strong></td>
<td>$48,606</td>
<td>$62,117</td>
<td>$50,785</td>
<td>$38,968</td>
<td>$39,670</td>
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<tr>
<td><strong>Subs DC</strong></td>
<td>$79</td>
<td>$433</td>
<td>$5,415</td>
<td>$8,804</td>
<td>$16,389</td>
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<tr>
<td><strong>Other</strong></td>
<td>$26,519</td>
<td>$28,325</td>
<td>$23,224</td>
<td>$20,657</td>
<td>$24,448</td>
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<tr>
<td><strong>Total Sustain</strong></td>
<td>$179,202</td>
<td>$200,521</td>
<td>$159,682</td>
<td>$139,543</td>
<td>$145,062</td>
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<tr>
<td><strong>TOTAL CAPITAL</strong></td>
<td>$381,205</td>
<td>$275,867</td>
<td>$264,184</td>
<td>$281,361</td>
<td>$222,372</td>
</tr>
</tbody>
</table>

| Rate Case Total                  | $437,242   | $387,444 | $333,044   | $326,044  | $362,524   | $354,591   |

* Does not include Non-T Asset Category Totals
**Direct dollars only (not fully loaded)
Drivers for Capital Spending

• Examples of capital spending drivers for managing risk in coming years
  – Wildfire Mitigation Plan and Program
  – GMD
  – Seismic
• Focusing on projects that have the highest risk on BPA’s transmission system
  – From the Financial, Environmental, Reliability, Compliance and Safety perspective through the CHR process/analysis
• Spend the increased and targeted capital now to improve the safety and reliability of our system, in order to save money in the long run
BPA has adopted industry leading asset management standards and begun building the capabilities to understand individual asset’s criticality, health and risks. Defensible and proven methodologies and analytical methods will be developed, tested and adopted to inform the prioritization of maintenance and capital investments. Transparent, objective CHR information and risk quantification will enable Transmission decision makers to optimize the utilization of financial and human resources to deliver best value for BPA and the region.
## Risk Table With Impacts

<table>
<thead>
<tr>
<th>Safety</th>
<th>Reliability</th>
<th>Financial</th>
<th>Environmental</th>
<th>Compliance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Impact Level</td>
<td>The potential impact of a risk even on a public or worker safety</td>
<td>The potential impact of a risk even on service or grid reliability</td>
<td>The potential risk event resulting in financial costs to customers/rate payers measured in incremental dollar impact</td>
<td>The potential impact on natural resources such as air, soil, water, plant or animal life</td>
</tr>
<tr>
<td>Catastrophic</td>
<td>Many fatalities, Mass Serious Injury or Illness. Many deaths of employees, public members or contractors.</td>
<td>Customer loses impact. Outage resulting in greater than 20 million total customer hours of interruption.</td>
<td>Impact &gt; $500k in costs; consider costs to customers, shareholders, and third parties.</td>
<td>Irreversible and immediate damage to surrounding environment (e.g. extinction of species).</td>
</tr>
<tr>
<td>Severe</td>
<td>Few fatalities, Serious Injury or Illness. Permanent Disability. Few fatalities of employees, public members or contractors.</td>
<td>Outage resulting in at least 1 million total customer hours of interruption.</td>
<td>Impact between $50k and $500k in costs; consider costs to customers, shareholders, and third parties.</td>
<td>Resulting in severe damage to surrounding environment.</td>
</tr>
<tr>
<td>Extensive</td>
<td>Serious injury or illness, Permanent Disability. Serious injury or illness to many employees, public members or contractors resulting in hospitalization, disability or loss of work.</td>
<td>Outage resulting in at least 200,000 total customer hours of interruption.</td>
<td>Impact between $50k and $500k in costs; consider costs to customers, shareholders, and third parties.</td>
<td>Resulting in significant medium-term damage greater than 2 years.</td>
</tr>
<tr>
<td>Major</td>
<td>Serious injury or illness; Permanent Disability. Serious injury or illness to few employees, public members or contractors resulting in hospitalization, disability or loss of work; several employees, members of the public or contractors sent requiring treatment beyond first aid.</td>
<td>Outage resulting in at least 20,000 total customer hours of interruption.</td>
<td>Impact between $5k and $50 million in costs; consider costs to customers, shareholders, and third parties.</td>
<td>Resulting in moderate medium-term damage greater than four months; reversible damage to surrounding environment.</td>
</tr>
<tr>
<td>Moderate</td>
<td>Minor injuries or illness. Minor injuries or illness to several employees, public members or contractors; few employees, member of the public or contractors requiring treatment beyond first aid.</td>
<td>Outage resulting in at least 2,000 total customer hours of interruption.</td>
<td>Impact between $5k and $50 million in costs; consider costs to customers, shareholders, and third parties.</td>
<td>Resulting in moderate short-term damage of few months; reversible damage to surrounding environment with no secondary consequences.</td>
</tr>
<tr>
<td>Minor</td>
<td>Minor injuries or illness; Minor injuries or illness to few employees, public members or contractors requiring first aid.</td>
<td>Outage resulting in at least 100 total customer hours of interruption.</td>
<td>Impact between $5k and $50k in costs; consider costs to customers, shareholders, and third parties.</td>
<td>Immediately correctable damage to surrounding environment.</td>
</tr>
<tr>
<td>Negligible</td>
<td>No injury or Illness. Outage resulting in less than 20 total customer hours of interruption.</td>
<td>Impact of less than $5k in costs; consider costs to customers, shareholders, and third parties.</td>
<td>Resulting in negligible to no damage; very small damage, if not negligible.</td>
<td>Noncompliance impact: No compliance impact up to an administrative impact.</td>
</tr>
</tbody>
</table>
CHR Use In FY20 (Active Now)

<table>
<thead>
<tr>
<th>Frequency Description</th>
<th>Frequency/Year</th>
<th>Frequency Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Once Every &gt; 10 / year</td>
<td>F =&gt; 10</td>
<td>Common</td>
</tr>
<tr>
<td>Once Every 1-10 / years</td>
<td>F = 1-10</td>
<td>Regular</td>
</tr>
<tr>
<td>Once Every 1-3/Years</td>
<td>F = 1-0.3</td>
<td>Frequent</td>
</tr>
<tr>
<td>Once Every 3-10/Years</td>
<td>F = 0.3 - 0.1</td>
<td>Occasional</td>
</tr>
<tr>
<td>Once Every 10-30/Years</td>
<td>F = 0.1 - 0.033</td>
<td>Infrequent</td>
</tr>
<tr>
<td>Once Every 30-100/Years</td>
<td>F = 0.033- 0.01</td>
<td>Rare</td>
</tr>
<tr>
<td>Once Every 100+/Years</td>
<td>F = &lt; 0.01</td>
<td>Remote</td>
</tr>
</tbody>
</table>

Only applies to lines, subs & SPC. Telecomm excluded until criteria development.
Risk Heat Map Based on CHR Methodology

![Heat Map Image]
Reliability Risk Heat Map

Reliability Criticality Impact Scale

- 1: Negligible
- 2: Minor
- 3: Moderate
- 4: Major
- 5: Extensive
- 6: Severe
- 7: Catastrophic

Clear Filters

Risk Tolerance Options

- Risk Tolerance: Total Bundle Estimate / Program

Below Risk Tolerance Threshold: $129,752,000
Exceeds Risk Tolerance Threshold: $58,095,566
Total: $188,748,366

Resource Queue Reliability Risk Assessment by Bundle

Bundle ID | Bundle Name | RS | Reliability CI | Max Health Score | FY20 | FY21 | FY22 | FY23 | FY24 | Total Bundle Estimate FY20-FY24
---|---|---|---|---|---|---|---|---|---|---
P01281 | MCNARY-ROSS 1: INSULATOR REPLACEMENT | 60558556 | 6 | 10 | $0 | $0 | $556,461 | $3,145,725 | $3,145,725 | $5,617,910
P02633 | MURRAY-CUSTER 1: CORRIDOR NO REPLACEMENT | 16177917 | 6 | 10 | $0 | $0 | $6,252,640 | $6,252,640 | $12,505,280
P03954 | CHEMAWA DISTRICT PRIORITY POLES, FY20 DESIGN FY21 PROD | 7054249 | 6 | 10 | $99,170 | $240,734 | $66,276 | $0 | $0 | $406,200
P03957 | REDMOND DISTRICT PRIORITY POLES, FY20 DESIGN FY21 PROD | 2873925 | 5 | 10 | $2,754,745 | $4,216,674 | $1,100,318 | $0 | $0 | $8,073,737
P03956 | KALISPELL DISTRICT PRIORITY POLES, FY20 DESIGN FY21 PROD | 2752826 | 5 | 7 | $159,048 | $313,737 | $84,470 | $0 | $0 | $556,892
P02003 | GRAND COULEE-HANFORD 1: GW REPLACEMENT | 2075221 | 3 | 10 | $0 | $202,236 | $128,279 | $0 | $0 | $411,517
P03551 | THE DALLES DISTRICT PRIORITY POLES, FY20 DESIGN FY21 PROD | 1837215 | 5 | 9 | $188,927 | $376,575 | $101,757 | $0 | $0 | $665,259
P01322 | PEARL-KEELER 1: (STEEL) 2.5" EXPANDED RECONDUCT | 1096018 | 6 | 10 | $0 | $0 | $96,098 | $341,517 | $341,517 | $779,041
P01282 | PEARL-KEELER 2: (STEEL) 2.5" EXPANDED RECONDUCT | 87208 | 6 | 10 | $0 | $0 | $0 | $0 | $0 | $0
Total | | | | | | | | | | $9,064,358 | $12,057,952 | $46,517,746 | $50,554,155 | $50,554,155 | $188,748,366
Asset Management & CHR Metrics

- Asset Utilization Ratio: Total revenue earned for every dollar of assets
- Severe Risk Assets: How many assets above risk tolerance where replaced
- Portfolio Spend Efficiency: How effective is the portfolio makeup at risk reduction per dollar
- Portfolio Reliability Strength: 0 – 1 indicator of how healthy the system is
CHR Return on Investment

CHR informing decisions has resulted in savings. This includes examples of savings into perpetuity. Examples include:

- Dual vs. Single Vendor Relay Lifecycle analysis. Ongoing Lifecycle savings with time (Lifecycle cost savings of ~$5M - $8M/year in perpetuity).

- Shelton – Fairmount Cable Selection. Direct savings from historic design selections with alternative cable selection. (Lifecycle cost savings ~$5M)

- Transformer Seismic Mitigation at Longview. Risk analysis for project scope resulting in avoided costs and acceptable risk. (Avoided costs of ~$4.2M)

- Circuit Breaker refurbishment vs replacement analysis for fault duty. Millions in avoided costs through risk/lifecycle analysis. (Avoided costs of ~$4.5M)
Process of Prioritization

1. Project Identified
2. Analysis of Available CHR Info
3. CHR Scoring (if applicable)
5. Prioritization through CIA Process
6. Evaluation Against other Projects
7. Incorporated in Asset Plan – Moved to Execution
Risk Assessment

Shelton – Fairmont No.1 Line
CHR in action to inform decision

Rebuild Line
Spot Maintenance

<table>
<thead>
<tr>
<th>Year</th>
<th>Shelton-Fairmount NO.1</th>
<th>Year</th>
<th>Shelton-Fairmount NO.1</th>
</tr>
</thead>
<tbody>
<tr>
<td>2020</td>
<td>10800</td>
<td>2020</td>
<td>10800</td>
</tr>
<tr>
<td>2027</td>
<td>18980</td>
<td>2027</td>
<td>109980</td>
</tr>
</tbody>
</table>

Delta (2027 - 2020)

- Delta (2027 - 2020) = 8180
- EAC Per Option = 1618
- Risk Spend Efficiency = 5.06
- Risk Spend Efficiency = 0.44

Rebuild option has higher Risk Spend Efficiency; or reduces more risk per annum per dollar.

*EAC = Equivalent Annual Cost (over lifecycle)
Transmission Sustain Program Capital Funding Maturity Model

Note: includes wood and steel poles, subs AC, subs DC, PSC, & SPC
Transmission Capital: Execution & Performance
Project Playbook

Need Identified (Customer vs. BPA)

Non-wires

DER DR Batteries
Caps Flow Control
Etc.

Traditional Build

Customer Build

BPA

Secondary Capacity Model (SCM)

Primary Capacity Model (PCM)

Contract out

BPA Staff

Non-wires

Traditional Build

Customer Build

BPA

Secondary Capacity Model (SCM)

Primary Capacity Model (PCM)

Contract out

BPA Staff
What drove the need?

– Transmission Services has had difficulties fully executing on its Strategic Asset Management Plan based on two main drivers
  1. An increase in the amount of small, labor intensive projects.
  2. A decrease in labor resources.

– The result has primarily impacted the replacement of aging infrastructure.
Product mix is crucial in determining delivery on the capital program.
Transmission Engineering Resources

Federal and Supplemental FTE by FY

FTE down 35%
Secondary Capacity Model (SCM)

What will BPA resources be focused on going forward?

- BPA resources will support both SCM and Primary Capacity Model (PCM) work.
- Specifically, BPA resources will be engaged with the Owners Consultant (OC) and Progressive Design Builder (PDB) at defined touchpoints. Oversight is provided by the project management offices interface team.

How will customers benefit?

- Increased reliability of the transmission system as identified aging assets are replaced.
- Increased ability to execute customer work
# Secondary Capacity Model (SCM)

## First Projects Being Executed Through SCM

<table>
<thead>
<tr>
<th>PROJECT</th>
<th>PROJECT DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Allston – Driscoll</td>
<td>21 mile transmission line rebuild</td>
</tr>
<tr>
<td>Driscoll – Astoria</td>
<td>21 mile transmission line rebuild</td>
</tr>
<tr>
<td>Ostrander Sub</td>
<td>Replace a reactor bank and 17 - 500kV disconnect switches.</td>
</tr>
<tr>
<td>Hot Springs Sub</td>
<td>Replace 500kV Reactor bank, 3 breakers, and 12 disconnect switches.</td>
</tr>
<tr>
<td>St. Johns Sub</td>
<td>Replace 500/230kV Transformer bank and 17 disconnect switches.</td>
</tr>
<tr>
<td>Rocky Reach Sub</td>
<td>Replace one phase of the 345/230kV Transformer bank and 3 disconnect switches.</td>
</tr>
<tr>
<td>Ross – St. Johns</td>
<td>Replace insulators and ground wire on the 7 mile double circuit line.</td>
</tr>
<tr>
<td>Santiam – Albany</td>
<td>New 230kV bay at Santiam, replace 4 breakers, 16 disconnect switches and a variety of 69kV outdoor equipment</td>
</tr>
<tr>
<td>Longhorn Sub</td>
<td>New 500/230kV substation</td>
</tr>
</tbody>
</table>
Transmission Capital: Special Focus

Vancouver Control Center Facilities
Facilities Capital Program

• Vancouver Control Center (VCC) is a major component of the Facilities Capital in the next several years

• Stakeholder workshops on individual capital projects are not the norm, but BPA recognizes the size and importance of this project makes it different.
Does BPA Need a Control Center?

- Even in RTO/ISO structures, local utilities maintain most TOP responsibilities and some BA responsibilities.

<table>
<thead>
<tr>
<th>NERC Req’ts *</th>
<th>Midwest ISO</th>
<th>Local Utility</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>BA</td>
<td>TOP</td>
</tr>
<tr>
<td>Full</td>
<td>332</td>
<td>37</td>
</tr>
<tr>
<td>Partial</td>
<td>7</td>
<td>2</td>
</tr>
<tr>
<td>None</td>
<td>4</td>
<td>489</td>
</tr>
<tr>
<td>Normal</td>
<td>110</td>
<td>0</td>
</tr>
</tbody>
</table>

- Control Center functions are more than just NERC responsibilities, for example:
  - Safe switching and clearance procedures
  - Dispatching crews
  - Monitoring communications network

- Technology needs are significant, for example:
  - Significant RAS infrastructure

- Communications network is designed and built to support Ross Complex

- Legal and policy constraints on contracting out inherently governmental functions

*Organization Registration and Organization Certification (nerc.com)
Why is the VCC Needed?

**Business Needs:** Dittmer Control Center (DCC) is in an end-of-functional life facility that must be upgraded or replaced to preserve existing functionality and mitigate growing operational risks.

- Improve resiliency against physical risks (seismic, fire, etc.)
- Improve physical security
- Support Grid Mod benefits
- Meet 20 year space needs for staff/equipment
- Lower total cost of ownership
- Lower leased space cost
- Improve workflow and efficiency
- Consolidate data centers

**What's in it for Customers?** Continuity, resiliency and efficiency are essential for Bonneville to meet customer needs and reliably serve the Pacific NW.
What if we don’t build VCC?

What happens to the capital?

- Dittmer Control Center (DCC) will require major renovations
- Re-deployed for other work, such as replacements and abatement

What are the risks?

- Construction cost escalation (~$20M / year)
- Continued operational risk acceptance
- Continued maintenance/repair with decreased return value
Stakeholder Engagement

• Design Business Case expected in Sep. 2021

• BPA will hold a stakeholder workshop after the design Business Case is completed, including updated cost estimates
BP-22 Facilities Capital Program

- $53M reduction to BP-22 capital levels
- Managing costs and improving estimates and certainty of capital investments
- Vancouver Control Center (VCC) investment
  - Shift +1 year for scoping to refine cost and schedule
  - Costs are contained through use of the Capital Investment Acquisition (CIA) process
  - Improved execution through Progressive Design-Build
## Facilities Capital

### Capital Summary

<table>
<thead>
<tr>
<th>Asset Category Direct Spending</th>
<th>2022</th>
<th>2023</th>
<th>2020-2021</th>
<th>2022-2023</th>
<th>2022-2023</th>
<th>Increase (Decrease)</th>
<th>Increase (Decrease)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Facilities BP-22 Final IPR</td>
<td>74,200</td>
<td>88,200</td>
<td>26,450</td>
<td>81,200</td>
<td>81,200</td>
<td>54,750</td>
<td>-</td>
</tr>
<tr>
<td>Facilities BP-22 Proposed IPR 2</td>
<td>53,200</td>
<td>56,200</td>
<td>26,450</td>
<td>81,200</td>
<td>54,700</td>
<td>28,250</td>
<td>(26,500)</td>
</tr>
<tr>
<td>Delta of Proposed IPR2 - Final IPR</td>
<td>(21,000)</td>
<td>(32,000)</td>
<td>0</td>
<td>0</td>
<td>(26,500)</td>
<td>(26,500)</td>
<td>(26,500)</td>
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</tbody>
</table>
## Vancouver Control Center Capital

### BP-22 Final IPR

<table>
<thead>
<tr>
<th>($ thousands)</th>
<th>Capital spending assumed, Technical Services Building and Vancouver Control Center</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2022</td>
</tr>
<tr>
<td>Facilities</td>
<td>37,300</td>
</tr>
<tr>
<td>Transmission</td>
<td>-</td>
</tr>
<tr>
<td>IT</td>
<td>-</td>
</tr>
<tr>
<td>Total Vancouver Control Center</td>
<td>37,300</td>
</tr>
</tbody>
</table>

### BP-22 Proposed IPR2

<table>
<thead>
<tr>
<th>($ thousands)</th>
<th>Capital spending assumed, Technical Services Building and Vancouver Control Center</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2022</td>
</tr>
<tr>
<td>Facilities</td>
<td>12,200</td>
</tr>
<tr>
<td>Transmission</td>
<td>-</td>
</tr>
<tr>
<td>IT</td>
<td>-</td>
</tr>
<tr>
<td>Total Vancouver Control Center</td>
<td>12,200</td>
</tr>
</tbody>
</table>

### VCC Delta Proposed IPR2 to Final IPR

<table>
<thead>
<tr>
<th>($ thousands)</th>
<th>2022</th>
<th>2023</th>
<th>2024</th>
<th>2025</th>
<th>2026</th>
<th>2027</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
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VCC Business Case Development

Capital Cost Containment
- Capital Investment Acquisition process helps limit exposure
- Stage Gate 0 approved limited capital for feasibility scoping
- SG3 Business Case would include design costs only
- SG4 Business Case would include balance of construction and activation costs

* Take Away: One alternative to be selected via Business Case in Sep. 2021 at Stage Gate 3 (SG3) for design development
Next Steps

– Complete design Business Case (Sep. 2021), including cost refinement

– Future VCC customer workshop to be scheduled

– Explore all financing options, including lease financing

– Continue to refine future capital projections, including sustain vs. expand, to deliver long-term value
Transmission Capital: Budget
# Historical & Future Capital Spend

## Program  
### Capital Expand (CapEx)

<table>
<thead>
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<td>$14,906</td>
<td>$5,588</td>
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<td>$5,000</td>
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<td>$67,325</td>
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<td>Upgrades &amp; Additions</td>
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<td><strong>Total Capital Expand</strong></td>
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### Capital Sustain

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**TOTAL CAPITAL**  
$381,205 | $275,867 | $264,184 | $281,361 | $222,372 | $282,460 | $357,000 | $377,000 | $425,000 | $564,600

**Rate Case Total**  
$437,242 | $387,444 | $333,044 | $326,044 | $362,524 | $354,591

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*Does not include Non-T Asset Category Totals  
**Direct dollars only (not fully loaded)
BonaVille Power Administration

Strategic Capital & Financial Health Engagement

- BPA has made progress on its Financial Plan goals and continues to identify areas for improvement.

- Key areas of improvement:
  - Borrowing Authority: BPA is not on track to meet our goal of maintaining $1.5b of available borrowing authority. The forecast shows that in 2024, BPA falls short of this objective and needs to take action to achieve this goal.
  - Debt Outstanding: BPA’s debt to asset ratio has improved slightly, however Transmission has and continues to be a net borrower, resulting in growing debt outstanding, large fixed costs and reduced financial flexibility.
BPA is committed to engaging more deeply on these issues and related customer concerns. The following forums will be used:

- **QBR technical workshops**: BPA established these workshops to routinely brief the region on our key financial and operational performance metrics.
  
  - We recognize the need for a more detailed and routine update on the various Transmission capital program cost and execution metrics and will be including these in upcoming QBR meetings this year.

- **Post BP-22 Workshops**: Following the BP-22 rate case, BPA will host a series of public workshops to engage with customers on the financial health objectives laid out in the Financial Plan.
  
  - The goals of the Financial Plan are still valid. The intent is to reassess how we achieve those goals, discuss additional metrics and policies that may be needed to bolster our financial health, and formulate a glide path toward sustainable capital financing.
  
  - BPA recognizes the critical dependency between our financial health objectives, rates and the planning and execution of the Transmission capital program. Our intention for these workshops is to ensure a comprehensive review and discussion of these interrelated issues to formulate a long-term approach.
Columbia River System Operations Environment Impact Statement
In the September 30, 2020 IPR closeout letter, Bonneville acknowledged that financial impacts of the Columbia River System Operations (CRSO) Environmental Impact Statement and associated ESA consultations may need to be addressed in a second IPR.

In the CRSO EIS ROD, Bonneville indicated that it would likely be able to implement the actions it agreed to fund in the Selected Alternative within Bonneville’s cost structure or through cost management actions across Bonneville.

The CRSO EIS ROD also provided a comprehensive list of all mitigation and non-operational conservation measures for ESA-listed species from the CRSO EIS and associated ESA consultations.

BPA has reviewed its obligations in the CRSO EIS ROD for the Selected Alternative. For those actions that Bonneville expects to fund through its Fish and Wildlife (F&W) Program in FY22 and FY23, Bonneville’s assessment is that the F&W budget established in the September 2020 IPR will be sufficient to cover the costs of the actions. Flexibility within the F&W Program allows budgets to be shaped annually to ensure that priority-funding needs are met.
Columbia River Fish Mitigation Studies
In the BP-22 Initial Proposal BPA proposed expensing Corps of Engineers Columbia River Fish Mitigation (CRFM) studies instead of making them a regulatory asset. Note that as this is a rates proposal, the BP-22 dataset included the CRFM studies whereas the IPR dataset did not.

If the proposal is accepted, CRFM study costs starting in FY22 would be classified as an IPR expense and BPA will update our IPR dataset to include the costs.

Current IP CRFM studies amounts:
- FY22: $7.3M
- FY23: $3.6M
IPR2 Next steps
Process Overview

March 3 – March 24
  – Opportunity to comment on IPR2 topics

Early – Mid April
  – Post responses to IPR2 questions and comments

April 30
  – IPR2 Closeout report published with final spending levels
Submitting Comments

• Comment period open March 3 – March 24
• Comments can be submitted:
  – Email BPAFinance@bpa.gov
  – Online at www.bpa.gov/comment
  – By mail to BPA, P.O. Box 14428, Portland, OR 97293
Thank you

Questions?
APPENDIX
Prior Presentation on Debt Management

• BPA outlined concerns around borrowing authority, debt management and access to capital issues at a public workshop in September 2020.

• Those materials can be found on bpa.gov, at the following link, starting at page 49 of the package.
Portfolio Prioritization Analysis

- Evaluate at Portfolio level for Benefit/Total Economic Cost, Budget Level Alignment, and Resource Capability
  - Generate Asset Plan
  - 2 Year Cycle
  - Update Each Year (Rolling Methodology)

- Portfolio Evaluation Categories
  - Expand
    - Main Grid
    - Projects Funded In Advance
    - Area & Customer Service
    - Upgrades/Additions
  - Sustain
    - Power System Control (PSC) – 4 Projects
    - System Power Control (SPC) – 8 Projects
    - Subs AC – 11 Projects
    - Subs DC – 2 Projects
    - Lines – Wood/Steel – 17 Projects
    - Telecom – 9 Projects
Economic Development and Reliability

• BPAT has made significant investments in its Transmission System in order to support the commercial needs of customers.
  – Large Generation Interconnection
  – New Large Load Interconnections (e.g. Quenett Creek, Morrow Flat)
  – Upgrades driven by Transmission Requests (i.e. Cluster Study)

• Balance between customer-expand versus sustain replacement projects
  – Reliability impacts
  – Service quality to existing customers
  – Prioritizing resources for larger customer-driven projects balanced with smaller projects
Case Study: Central Oregon
Goldendale Substation - 115/69kV Xfmr bank & brkr

- BPA substation is completely depreciated and at end of life
- Estimated rebuild cost: $10M

• Alternative to BPA rebuild
  - Customer utility Klickitat PUD could replace the function in its nearby E.E. Clouse Substation for approximately $4M
    - Con: BPA would need to provide expense funding to Klickitat
    - Pro: Eliminates future replacement obligation and avoid $25K/year O&M costs.
  • Currently negotiating lease agreement