CIR Workshop: Investment Portfolio Optimization

March 10, 2014
Workshop Agenda

- Affordability Cap
  - Purpose
  - How the range was set
  - How it would work

- Proposed Capital Spending – Before and after reductions

- Prioritization of Investments
  - Goals
  - Purpose and scope
  - Design of new process
  - Analytical approach
  - Proposed portfolio results
  - Actions to continuously improve

- Capital Related Cost Analysis
Affordability Cap
Objectives

- BPA is seeking to optimize its investment portfolio in order to provide a reliable, adequate, efficient and economical power and transmission system and fulfill regional commitments in Energy Efficiency and Fish and Wildlife. This optimization must take into account not only investment needs but also rate, long-term cost structure, financing and other objectives.

- To that end, the Affordability Cap, which works in conjunction with BPA’s process of prioritizing investments and allocating capital, places a limit on planned cumulative capital expenditures and is integral to establishing an optimal investment portfolio. The Affordability Cap is designed to help:
  - Manage long-term capital-related costs and associated rate impacts;
  - Enable BPA to meet its long-term financing and debt management objectives; and
  - Retain the long-term support of the financial community, including rating agencies.
Affordability Cap – Why now?

- BPA and its FCRPS partners have been facing growing investment requirements to replace and modernize aging infrastructure, add capacity to meet loads and integrate new generating resources, and fulfill regional commitments for energy efficiency and fish and wildlife restoration.

- At the same time, BPA’s access to low-cost sources of capital is constrained as Treasury borrowing is limited.

- BPA is implementing a capital investment prioritization process to ensure that its limited capital is deployed optimally. A necessary companion to investment prioritization is a constraint – a cap – on spending to stabilize long-term capital-related costs and associated rate impacts and ensure BPA access to capital over a rolling 10-year period.
Total capital spending amounts are based on the 2012 CIR/2013 Debt Management Process. Base Case capital spending represents a 9 year average of total capital costs between FY 2015-2023 less a $35m reduction to capital spending beginning in FY 16 in lieu of revenue financing. Capital amounts are fully loaded and Fed Hydro and Transmission include a 5% lapse factor.
BPA is proposing an Affordability Cap of $855 million to $940 million per year over the FY 2014-2023 period.

This cap range is consistent with the objectives in slide 4 – manage capital costs, meet long-term financing and debt management objectives, and retain the long-term support of the financial community. This Affordability Cap also reflects a review of long-term capital-related costs and the implications of the costs for power and transmission rates.

Additionally, BPA evaluated the cap range against its long-term debt management objectives to ensure capital financing needs were covered over a rolling ten year period. This is consistent with the objectives of BPA’s Access to Capital Strategy which are to ensure that capital needs are covered over a rolling 10 year period and that BPA is able to meet its capital requirements at low-cost.

- Based on BPA’s financing assumptions, the $940 million cap leaves $750 million of U.S. Treasury Borrowing Authority at the end of FY 2023.
- Based on BPA’s financing assumptions, the $855 million cap leaves $1.25 billion of U.S. Treasury Borrowing Authority at the end of FY 2023.
Financing Assumptions

- The following financing assumptions were used to develop the affordability cap and are consistent with the updated 10-year Access to Capital Strategy (i.e., Revised FY13 Plan):
  - Lease Financing of Transmission Capital: Ongoing 50% starting in FY 2013
  - Conservation Financing: 70% starting in FY 2016
  - Reserve Financing (Transmission): $15 million per year through FY 2023
  - Capital reduction in lieu of Revenue Financing: $35 million per year starting in FY 2016
Long-Term Rates Analysis – Power

Power Rate Forecast by Rate Period - Base Case

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<tbody>
<tr>
<td>PF Tier 1</td>
<td>9.0%</td>
<td>11.4%</td>
<td>-0.1%</td>
<td>0.8%</td>
<td>3.7%</td>
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Long-Term Rates Analysis – Transmission

Transmission Rate Forecast by Rate Period - Base Case

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<tbody>
<tr>
<td>Network</td>
<td>14.2%</td>
<td>9.7%</td>
<td>4.5%</td>
<td>3.4%</td>
<td>1.7%</td>
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<tr>
<td>Intertie</td>
<td>-7.5%</td>
<td>14.4%</td>
<td>4.7%</td>
<td>1.2%</td>
<td>7.4%</td>
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<tr>
<td>Overall</td>
<td>11.0%</td>
<td>10.4%</td>
<td>4.6%</td>
<td>3.3%</td>
<td>2.5%</td>
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% Change from Prior Rate Period
Analysis of Remaining US Treasury Borrowing Authority (EOY)

*Revised FY 13 Plan refers to the updated 10-year Access to Capital Strategy (Fall 2013)*
The Affordability Cap

- The Affordability Cap range was examined in terms of internal constraints on BPA and its federal partners’ ability to execute a large capital investment program, including labor, available outage time, and other constraints.

- Coincidentally, the cap range approximates the current capability of BPA and its partners’ ability to successfully carry out a large investment program, as evidenced by the most recent 3 years of capital spending actuals (average $914 million per year versus the $855-$940 million cap range).

- Effectively, the Affordability Cap would constrain cumulative future capital spending to the recent rate of investment in nominal dollar terms. In real dollar terms, the Cap would require that BPA and its FCRPS partners find productivity and other savings to offset the effects of future inflation.
How the Affordability Cap would work

- The Affordability Cap would apply to the investment portfolio for Transmission, Federal Hydro, Facilities, Information Technology, Fish and Wildlife, Energy Efficiency, Security, Environment, and Fleet. The Affordability Cap would not apply to (1) Columbia Generating Station, (2) Columbia River Fish Mitigation, or (3) transmission projects that are tariff-driven and funded in advance by a customer.

- Performance in meeting the Affordability Cap would be measured on a cumulative basis over time. Annual overruns and underruns would be tracked, with future spending plans adjusted so that the cap range is not exceeded on a rolling 10-year basis.

- If conditions change, BPA intends to recalibrate the cap on a 2-year cycle prior to each Capital Investment Review. Any recalibration would be based on updated financial, rate, and related “affordability” factors.
Prioritizing Investments and Allocating Capital

- The Affordability Cap works in conjunction with prioritizing investments to optimize the investment portfolio.

- While the Affordability Cap sets a ceiling on total planned capital spending, it does so without regard for the condition of assets nor capacity or other demands that are placed on the power and transmission system.

- Within the capital prioritization process the merits of potential investments are assessed and evaluated in order to select a portfolio of investments that maximizes value within the limits of the Affordability Cap.
Proposed Capital Spend –
Before and After Reductions
Initially Submitted Capital Expenditures

Affordability Overview
Initially Submitted Capital Expenditures
Includes Overheads and AFUDC, excludes LGIA projects

Affordability Cap Range
$855m - $940m

BONNEVILLE POWER ADMINISTRATION
Proposed Capital Expenditures

Affordability Overview
Proposed Capital Expenditures
Includes Overheads and AFUDC, excludes LGIA projects

**Headroom** - currently $110m is available while holding to the $855m average annual spending level of the lower cap boundary.

**Additional headroom** is made available to the extent spending is targeted above the lower boundary of the cap range - illustrated at the upper cap boundary.

See also page 31 of CIR Initial Publication
Sustain Capital Spending levels – before and after proposed reductions

(Excludes AFUDC and Overheads, Nominal $)

The ceiling is calculated in four steps:
1. Sustain spending FYs 2013-2017 is averaged. The average spending includes the haircut and other reductions for FYs 15-17
2. Inflation factor is applied for FYs 2018-2023 (1.7%)
3. The inflation factor is partially offset by an efficiency/productivity gains factor (equal to 50% of the inflation factor)
4. A real growth factor of 1% is applied

The ceiling will be allocated across asset categories at a later date. Spending above an allocated amount is subject to competition for capital through the BPA-wide prioritization process.
Prioritization of Investments
Introduction
Why prioritize capital investments?

- BPA is proposing investment levels that are very high -- beyond what may be affordable
- Rate, long-term cost structure, and financing objectives will serve as a constraint on capital spending
- Until recently, BPA did not have value-based methodology for allocating capital across diverse investments
- Customers have rightly insisted that BPA adopt a systematic and transparent process to make trade-offs and ensure that capital is deployed optimally across the organization
- A systematic, value-based method for prioritizing capital investments across business units is a best practice among top performing utilities
Goals for new investment prioritization process

Create an agency-level process that:

• Furthers the agency’s strategic priorities/objectives
• Provides a “level playing field” for projects with different risk/cost/benefit characteristics from various asset categories
• Optimizes the agency’s investment portfolio within capital, labor, rate, and other constraints
• Ensures decision-making is risk-informed and supported by thorough analysis
• Provides transparency both internally and externally
• Enables efficient, timely decision making
• Enables BPA to track the performance and measure the realized value from investments

The methodology and process must be directed at maximizing the long-term operational and economic value of assets.
The new prioritization process is a significant change to BPA’s approach to investment decision-making

<table>
<thead>
<tr>
<th>Prioritization of expansion investments</th>
<th>Before</th>
<th>After</th>
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<tbody>
<tr>
<td>Prioritized within each asset category using a process and criteria unique to that asset category. The results of each asset category’s prioritization are then added together to form an investment portfolio</td>
<td>Expansion-type investments are prioritized using a single BPA-wide process. Each asset category nominates, assesses, and evaluates its proposed investments using a standardized value-based approach. The results are combined and then prioritized by the CAB to form the BPA investment portfolio</td>
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<tr>
<th>Prioritization criteria for expansion investments</th>
<th>Before</th>
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<tr>
<td>Criteria for prioritizing expansion-type investments are often situational, tactical in nature, and consensus-driven, often without robust economic analysis</td>
<td>Metrics and modeling are based on leading practice economic and financial analysis. Metrics and modeling are standardized to provide efficiency, equitable treatment, and comparability of results</td>
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<thead>
<tr>
<th>Benefit assessments</th>
<th>Before</th>
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<tr>
<td>Benefits are described qualitatively, with limited quantification. The benefits are often limited to those that impact BPA. Benefit assessments rarely capture uncertainty ranges</td>
<td>All sources of value are captured quantitatively to the extent feasible, including benefits that are internal and external. Cost and benefit uncertainties are captured and modeled stochastically</td>
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<th>Rebalancing the portfolio</th>
<th>Before</th>
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<tbody>
<tr>
<td>Portfolio is re-balanced within each asset category, generally in conjunction with the BPA spending level review processes, every two years</td>
<td>Portfolio is re-balanced on a 6-month cycle by the CAB, with the results then entered into forecasts. The results of the re-balanced portfolio will be shared for public comment through the QBR process</td>
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<thead>
<tr>
<th>Cap on capital expenditures</th>
<th>Before</th>
<th>After</th>
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<tr>
<td>No formal long-term cap. Limits on rate period spending are established through CIR/IPR public process</td>
<td>Affordability Cap on capital expenditures is set by the CAB after customer comment in CIR. The cap applies to a 10-year planning horizon. Projected spending levels continue to be established through CIR/IPR process</td>
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<tr>
<th>Prioritization of Sustain investments</th>
<th>Before</th>
<th>After</th>
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<tr>
<td>Asset strategies are used to prioritize Sustain investments within each asset category</td>
<td>Same, except that a portion of sustain investments will be subject to the new BPA-wide prioritization process beginning in FY 2018 (discussed later)</td>
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<th>Governance</th>
<th>Before</th>
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<tr>
<td>The Administrator consults with the CFO to approve the process. The Administrator and sponsoring VPs select the individual asset category portfolios. The portfolios are then aggregated up to the BPA level</td>
<td>The CAB oversees the prioritization process and collectively recommends the BPA portfolio to the Administrator for final decision</td>
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Capital Prioritization
Methodology and Process
Overview
Which investments are covered by the new prioritization process?

**“Core” Sustain Investment**
Investment the primary purpose of which is to replace existing assets in order to maintain system performance and capability.

**Expansion and “Non-Core” Sustain Investment**
Investment that “grows” the asset base, i.e., adds capacity or new capabilities, or that increases operational output or productivity. Also includes sustain investment that is “non-core”

- **Compliance – 3 years**
  Investment must occur in next 3-years in order to comply with contract, order, or directive

- **Policy Commitment – 3 Years**
  Investment must occur next 3 years to fulfill commitments made by the agency

- **Discretionary -3 years**
  Investment that may be valuable, but can be deferred

Core sustain investments are exempt from the process. The process covers expansion and “non-core” sustain investments only.

“Core sustain” investment is prioritized through condition-based risk assessments, in which the highest priority is assigned to the most critical equipment and facilities at greatest risk of failure, obsolescence, safety issue, or other risk factor. Included are projects necessary to make core sustain investment viable, such as access roads that enable line replacements. Prioritization of core sustain investment occurs within the asset strategies that are developed by each asset category and approved by the CAB.

- For Transmission, Core Sustain investments include investments the primary purpose of which is to replace existing assets to manage failure, obsolescence, safety, and other risks. Investments the primary purpose of which is to upgrade or add capacity, flexibility, and other capabilities are classified as Expansion/Non-Core Sustain.
- For Federal Hydro, Core Sustain investments include investments the primary purpose of which is to replace existing assets to manage failure, obsolescence, environmental, or safety risks. Investments the primary purpose of which is to improve generating efficiency or add generating capability are classified as Expansion/Non-Core Sustain.
- For IT, Core Sustain investments include investments the primary purpose of which is to replace end-of-life cycle, failing, or technologically obsolete hardware. All other investment, including all software applications, are classified as Expansion/Non-Core Sustain.
- For Facilities, Core Sustain investments include investments, the primary purpose of which is to replace existing assets to manage failure risks and functional obsolescence, and mitigate safety risks. Investments the primary purpose of which is to upgrade or add capacity, flexibility, and other capabilities are classified as Expansion/Non-Core Sustain.

Energy Efficiency capital spending that implements the power plan and Fish and Wildlife capital investments that implement the BIOp and current fish accords are generally prioritized by entities outside the FCRPS. These investments are excluded from the new prioritization process.
Initially, the new BPA-wide prioritization process covers large expansion investments in transmission, facilities, and IT that would start in FYs 2015-2017.

Note: The term “investment” includes upfront capital expenditures and upfront expense expenditures to plan, design, and build or acquire equipment, facilities, or software applications.

Beginning with new starts in FY 2018, small expansion projects and potentially a portion of sustain investments will be rolled into the new process.
# How are expansion and non-core sustain investments classified?

## Expansion and “Non-Core” Sustain Investment

Investment that “grows” the asset base, i.e., adds capacity or new capabilities, or that increases operational output or productivity.

<table>
<thead>
<tr>
<th>Compliance</th>
<th>Policy Commitment</th>
<th>Discretionary</th>
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<tbody>
<tr>
<td>Investment must be authorized during the 3-year prioritization window in order to comply with contracts, orders, directives</td>
<td>Investment must be authorized during 3-year window to fulfill commitments made by the agency</td>
<td>May be preferable that investment start during the 3-year window, but it can be deferred</td>
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### Driver of investment

Investments in the Compliance classification are essential to the agency’s ability to comply with a signed contract, regulatory directive, or an executive or judicial branch order or directive. The contract, order or directive must compel BPA to make an investment -- failure to make the investment timely would result in a violation. To be eligible, the investment must be authorized and work must begin by no later than the end of the 3-year prioritization window.

Investments in this category are essential to meeting commitments made by the agency. The commitments require that BPA invest to meet tariff provisions, NOS policy commitments, and load service obligations. The commitments require that investments be authorized and that investment begins by no later than the end of the 3-year window. A failure to make the investment during the window would result in serious reputational and legal risks.

Expansion and “non-core” sustain investments that may be highly valuable, but that may be deferred beyond the 3-year prioritization window. Includes economic opportunity investments to reduce operating costs, enhance revenue, improve internal efficiency. Also includes “Compliance” and “Policy Commitment” investments if the investment can be deferred to year 4 or later. (Investments can move from the discretionary category to the categories at left over time)

### Discretion on whether and how to invest?

Little or no discretion on whether an investment needs to be made. The purpose and nature of the investment are largely mandated

Little or no discretion on whether an investment needs to be made, although changes in customer needs, market conditions, and other external factors can cause shifts in the composition and timing of the investment. Discretion is normally available on investment alternatives

Discretion on whether to invest and on investment alternatives

### Discretion on timing of investment?

Little or no discretion on timing of the investment. Often the investment is mandated by a certain date. Investment must be authorized and work must begin by no later than the end of the 3-year prioritization window in order to comply

Some discretion on timing of the investment. Timeline for completion is driven by agency commitments – must begin during the 3-year window to avoid reputational and legal risks

Yes

### Examples

LGIA agreement, if the agreement requires investment during the 3-year prioritization window

Investment to meet load service obligations, if necessary during the 3-year window

Investment in new security equipment to meet NERC CIP, if investment is required during the 3 years

Network open season-driven investment, if necessary during the 3 years

Information systems to meet regional dialogue commitments

SLICE application

New or expanded maintenance headquarters or new office building

Addition of a hydro generation turbine, turbine runner replacements when efficiency is a primary driver

New IT applications driven by business process efficiencies such as TAS, EE Central

Acceleration of a transmission sustain investment program

### Treatment in prioritization process

For these investments, the strategic fit test is deemed to be met. While capital costs are estimated and vetted, the economic value test is not required, but may be useful in choosing the best alternative. Investments in this category are not priority ranked based on economic value. Like Core Sustain, these investments are funded ahead of Policy Commitment and Discretionary investments.

Strategic fit test is deemed to be met. Economic value test applies. These investments are priority ranked along with discretionary investments based on economic value. They are flagged, however, and the CAB will likely fund these investments ahead of discretionary investments

Strategic fit and economic value tests apply. These investments are priority ranked along with Policy Commitment investments based on economic value. They are funded after investments in the Core Sustain, Compliance, and Policy Commitment classifications

For purposes of the 2013 process, “Investment must be authorized during the 3-year window” means the project must be proposed and approved on the basis of a business case at the agency level (ACPRT, CAB) during the FY 2015-2017 period. Projects authorized before October 1, 2014 are exempt from the 2013 process.
Sequence of steps in the capital investment prioritization process

The process is repeated on a 6-month cycle – to consider updates and new investment proposals.
Investment nominations address these key questions

- What is the proposed investment?
- Why is this investment needed?
- What assumptions are behind the investment need?
- What actions would we take if this investment were not made?
- What investment alternatives should be considered?
- Who would benefit from this investment?
- Descriptive information, such as investment name, type of investment, range of costs, key dates, etc.
Developing creative alternatives for each investment considered

Questions that are posed when developing investment alternatives:

- (Always required) A status quo case -- as a reference case for evaluating the merits of investment alternatives. What would happen if this investment were not approved?
- (Always required) a 2-year delay in the project start/completion date from what is proposed (this alternative will be automated)
- Are there viable alternatives that would cost, say, 70 percent of the proposed spending? If the budget were reduced by 30 percent from the proposed spending level, what action would you take?
- What would the investment alternative be if there were no funding, resource, outage and other constraints?
- What alternatives are there that would originate outside your asset category? For example: non-wires alternatives to transmission expansion including energy efficiency, generation re-dispatch, or distributed generation?
- Could the business process be re-engineered without automation (IT)?
- Are there options that would not require expenditures of capital? For instance, software-as-a-service, maintenance/repair, changes to operations, rent/lease in lieu of buy/own?
- Are there quick-fix or gradual-fix solutions that would enable the investment to be deferred?
What are the ingredients of Net Economic Benefit Ratio?

{PV = Present Value}

\[
\text{Net Economic Benefit Ratio} = \frac{\text{PV Economic Benefits} - \text{PV Project Investment} - \text{PV Post-Project Costs}}{\text{PV Project Investment}}
\]

“PV Economic Benefits” includes the present value of (examples):
- Avoided congestion costs (avoided fuel and other production costs that are enabled by adding capacity on constrained transmission paths)
- Avoided power purchase costs or increased power sales
- Incremental revenue (i.e., revenue beyond that needed to recover project investment and post project costs)
- Labor cost savings through process efficiencies
- Avoided customer value losses from outages
- Avoided CO2 or other environmental costs (monetized)

“PV Project Investment” includes the present value of:
- Upfront project costs (project planning, environmental review (NEPA), land/land rights acquisition, procurement, construction/installation)

“PV Post-Project Costs” includes the present value of:
- Maintenance and operations costs that would be incurred to sustain the asset after it is in service, e.g., maintenance, repairs, component replacements, monitoring, licensing (IT), other support

This metric is directed at capturing the net economic costs and benefits of the investment. Net economic benefits are determined without regard to the source of capital that would be used to fund the project and without regard to who might receive the benefits.
Investment Influence Diagrams were developed and used to build spreadsheet models to collect cost and benefit data, as well as evaluate investments.

- **Investment test cases** were selected and used to develop influence diagrams.
- **Influence diagrams used to:**
  - Identify types and sources of information
  - Clarify the relationship between inputs, decisions and value
  - Serves as a design to build spreadsheet model(s) used to assess and evaluate investment alternatives

- **Influence diagrams were used to build generic spreadsheet models** that could be used to assess costs and benefits, evaluate economics for a variety of investment alternatives.

**Source of value examples:**
- Avoided congestion costs
- Avoided revenue losses
- Avoided power purchase costs
- Avoided equipment-related costs
- Incremental revenue
- Avoided facility-related costs
- Avoided software-related costs
- Avoided fines/sanctions
- Reduced labor hours/costs
- Avoided productivity losses
- Avoided recovery and restoration costs
- Avoided outage costs (planned and unplanned)
A low / base / high range is assessed by Subject Matter Experts which captures key cost and benefit uncertainties for all model inputs.

Definition

**Low**
There is only a 10 percent probability that the variable will be *less than or equal to* this value.

**High**
There is only a 10 percent probability that the variable will be *greater than* this value.

**Base Case**
There is a 50 percent probability that the variable will be *less than or equal to* this value.

Project contingencies are not included in upfront cost estimates.
Investment Model(s) support investment decision-making

- Capital Prioritization process is supported by a suite of EXCEL based models (customized by Asset Category) including @RISK add-on for probabilistic analyses
- Supports the total economic value approach to valuing investment proposals
- Capable of modeling all sources of economic value and cost, i.e., value to BPA and customers
- Information to evaluate investments is assessed by credible Subject Matter Experts (SMEs)
- Customized templates are used to input basic project descriptive information, key start and end dates, life cycle, upfront costs (capital and expense) and to assess ongoing costs/benefits
- SMEs provide a range for each input rather than single point estimates capturing the uncertainty
- Key metrics include Net Economic Benefit, Investment (Present Value) and Net Economic Benefit Ratio used to rank projects by their economic “bang for the buck”
Sample project evaluation results –
For investments with assessed costs and benefits these were analyzed through standardized lenses

Investment value and key sources of risk
(Project Example)

Uncertainties in project value will be captured probabilistically

- Different values will be quantified
  - Value to BPA
  - Value to Region

- Key risk drivers will be quantified consistently to represent the same level of uncertainty (confidence intervals)

- Inputs will be assessed by SMEs and trained portfolio facilitators to eliminate systematic biases

Sensitivity analysis is conducted to identify key value/risk drivers
Portfolio Model aggregates individual investment results, presents portfolio perspective

- Investment Portfolio tool is EXCEL database with automated interface to:
  - Import project data
  - Manage database of projects
  - Save alternative portfolio’s
  - Update standard Portfolio charts and tables
  - Export results to PowerPoint presentation

- Produces variety of funding curve perspectives for specified portfolio of selected investments

- Visual basic code enables automation, productivity savings in preparing and producing results

- Results can be exported to a PowerPoint slide deck where slides can be selected and further edited

- Example outputs:

![Image of Portfolio Model Output Files]

![Image of Investment Model Output Files]

![Image of Portfolio Model Control Panel]
Investment Prioritization
Summary of Portfolio Results
40 investments were nominated as new starts in the FY2015- FY2017 prioritization window

<table>
<thead>
<tr>
<th>Compliance</th>
<th>Policy Commitment</th>
<th>Discretionary</th>
<th>Comments</th>
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<tbody>
<tr>
<td>Nominated, assessed and evaluated</td>
<td>4</td>
<td>0</td>
<td>21</td>
</tr>
<tr>
<td>Nominated, but not assessed</td>
<td>0</td>
<td>6</td>
<td>9</td>
</tr>
<tr>
<td>Nominated, but removed from consideration</td>
<td>2</td>
<td>7</td>
<td>2</td>
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Individual summaries and results for the 40 investments are available here ([link](#))
Caveats

**Costs and benefits assessed in Real $ 2014.** For purposes of assessing costs and benefits for investments, as well as comparing investment alternatives, project costs and benefits are expressed in real 2014 dollars

- Cost estimates include both direct and overhead expenditures. AFUDC is not included

**Nominal $.** For purposes of comparing investment levels to the affordability cap and developing capital budgets, the capital costs were expressed in nominal (inflated) dollars

- Costs estimates include both direct and overhead expenditures, as well as AFUDC

**Application of Overhead costs.** The economic analysis of Transmission and Facilities projects includes overhead costs of 25% of the projects estimated direct capital cost, but excludes AFUDC

- The rate is applied to each year’s capital spending in transmission and facilities when assessing each projects upfront costs
- Federal Hydro and IT investments receive no overhead distributions

**Project Interdependencies.** Some investments are interdependent, and we’ve noted the bigger interdependencies in the investment summaries. A prime example is the IT Service Management “suite” of three projects that IT would undertake to reduce labor hours/costs, reduce IT system outages, and otherwise improve quality and efficiency.

**Contingent investments.** Three LGIA are contingent on the resource developer entering into an LGIA and providing BPA an advance of funds. The probabilities of the investments going forward are not captured in the stochastic modeling.

**Assessment of alternatives.** In the case of some investments, investment alternatives were identified that have not yet been assessed. Generally, when time was limited, the alternatives deemed by SMEs to hold the most promise were the ones that were assessed.

**Assessment of transmission project benefits.** Broadly put, the benefits of transmission expansion projects appear to be understated, such as the benefits of avoided outages and the benefits of avoided low-probability but high consequence disruptive events. In addition, there may be some overstatement of upfront investment costs. These are areas which will be improved in future cycles.
Key planning assumptions

**Inflation Rates** – Consistent with Finance’s start-of-year budget handbook. The rates are based on projected changes in the U.S. GDP Price Deflator, a broad measure of inflation in the economy. The annual rates average 1.74% over 30 years.

**Carbon Cost** – Based on the US Government Interagency Working Group on Social Cost of Carbon study (May 2013 update). Low, medium and high values, with the medium value being $13.93/MWH in 2014, rising to $26.73/MWH by 2050.

**Market Price Forecast** – Based on the expected value forecast per the FY14/15 rate proposal. It is a "flat" forecast that blends the HLH and LLH forecasts at the weighted WECC on-peak/off-peak ratio (57%/43%). "High" and "Low" cases are derived which are based on 75 and 25 percentile assumptions, respectively.

**Labor Savings** – Standard rates are established for five general staffing categories. The rates range from $55/hour for a BPA hourly employee to $100/hour for a professional contract employee.

**Discount Rate** – A real discount rate of 3% is used for the evaluation of expansion investments in the prioritization process. This rate represents the agency’s approximate cost of capital of 5%, less a 2% inflation adjustment. The 5% rate is used in lieu of the traditional 9-12% rates because uncertainty ranges of costs and benefits are embedded in the assessment and evaluation of investments.

**AFUDC** – Calculated at 3.59%, the FY 2013 BPA rate. The rate is based on the weighted average interest rate of most BPA debt.

**Capitalized overhead rates** – Capitalized overhead costs were calculated to be 25% of the direct capital expenditures for Transmission and Facilities investments. This rate blends the FY 2013 rates of 32% for BPA labor and 6% for materials and construction contracts (13% for transmission overheads and 12% for corporate overheads). No capitalized overheads are applied to IT investments.
Prioritized Expansion Portfolio Funding Curve
(All 40 Nominations)

Incremental Benefits vs Investment Costs (All 40 Investments)
(Expected Value of Present Value vs Expected Value of Real Value)

Investments “green lighted” in this portfolio were selected based on economic value contribution & compliance requirements:

“Maximize Economic Value/Compliance Requirements sub Portfolio”
- Investments selected: 16
- Total Economic Value (Expected Value, PV): $651m
- Total Investment (2014 $ nominal): $78.7m
- 2015-2017 capital requirements: ~$52.5m

Legend
- □ Transmission
- □ IT
- ▻ Facilities

Cumulative Incremental Benefits (EV PV $ Millions)
Cumulative Investment Costs (EV 2014 Nominal $ Millions)
Prioritized Expansion Portfolio Funding Curve
(“Green lighted” Investments)

- This Curve includes only the capital spending during the prioritization window (2015 – 2017) for investments receiving a “green light”
- X-axis is “Cumulative capital expenditures (nominal) during the 3-year prioritization window”, not necessarily the capital budget for these projects as timing may change
Prioritized Expansion Portfolio (1)
(Net Economic Benefits Ratio)

<table>
<thead>
<tr>
<th>Investment Name</th>
<th>Asset Category</th>
<th>Investment Classification</th>
<th>Net Economic Benefit Ratio</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>Later Years</th>
<th>Total</th>
<th>Next Steps</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compliance Investments (Costs only assessed)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Transmission Aggregated CC Compliance projects LT $3M.</td>
<td>Transmission</td>
<td>Compliance</td>
<td>0                          944  0          0      0</td>
<td>944</td>
<td>Proceed with projects, update cost estimates</td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>Transmission Aggregated Compliance Sub Upgrades LT $3M</td>
<td>Transmission</td>
<td>Compliance</td>
<td>0                          0    0          589   589</td>
<td>1,178</td>
<td>Defer for now</td>
<td></td>
<td></td>
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<tr>
<td>FY15 - FY17 PMUs</td>
<td>Transmission</td>
<td>Compliance</td>
<td>337                        3,032</td>
<td>1,819</td>
<td>1,550</td>
<td>6,738</td>
<td>Proceed to Business Case</td>
<td></td>
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<tr>
<td>DeMoss-Fossil Shunt Reactive Project</td>
<td>Transmission</td>
<td>Compliance</td>
<td>0                          281   1,125</td>
<td>4,219</td>
<td>0</td>
<td>5,625</td>
<td>Proceed to Business Case</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Subtotal</td>
<td></td>
<td></td>
<td></td>
<td>1,412</td>
<td>4,157</td>
<td>6,627</td>
<td>2,138</td>
<td>14,334</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Discretionary Investments (Costs &amp; Benefits assessed)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ITSM - CRM Project</td>
<td>IT</td>
<td>Discretionary</td>
<td>76.5                       0    0          628   0</td>
<td>628</td>
<td>Proceed to Inception Stage</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Walla Walla Reinforcement (Tucannon River-Hatwai 115kV)</td>
<td>Transmission</td>
<td>Discretionary</td>
<td>18.1                       0    424        424   424</td>
<td>7,212</td>
<td>Proceed to Business Case</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Spare Transformers at Wind Sites - Slatt Substation</td>
<td>Transmission</td>
<td>Discretionary</td>
<td>16.8                       0    0          1,136</td>
<td>5,114</td>
<td>0</td>
<td>6,250</td>
<td>Proceed to Business Case</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spare Transformers at Wind Sites - Central Ferry Substation</td>
<td>Transmission</td>
<td>Discretionary</td>
<td>15.7                       0    0          1,136</td>
<td>5,114</td>
<td>0</td>
<td>6,250</td>
<td>Proceed to Business Case</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spare Transformers at Wind Sites - Rock Creek Substation</td>
<td>Transmission</td>
<td>Discretionary</td>
<td>13.0                       0    1,250      5,625</td>
<td>0</td>
<td>0</td>
<td>6,875</td>
<td>Proceed to Business Case</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Spare Transformers at Wind Sites - John Day Substation</td>
<td>Transmission</td>
<td>Discretionary</td>
<td>12.8                       1,250</td>
<td>5,625</td>
<td>0</td>
<td>0</td>
<td>6,875</td>
<td>Proceed to Business Case</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ITSM - CMD/B/AIM/ETS</td>
<td>IT</td>
<td>Discretionary</td>
<td>8.6                        0    511        0     0</td>
<td>511</td>
<td>Proceed to Inception Stage</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ITSM-CMS Project</td>
<td>IT</td>
<td>Discretionary</td>
<td>8.8                        0    0          276   0</td>
<td>276</td>
<td>Proceed to Inception Stage</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Monroe 500kV Line Retermination</td>
<td>Transmission</td>
<td>Discretionary</td>
<td>5.7                        0    0          1,271</td>
<td>3,813</td>
<td>3,390</td>
<td>8,474</td>
<td>Proceed to Business Case</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>O&amp;M Flex Project - Carlton Substation Sectionalization Project</td>
<td>Transmission</td>
<td>Discretionary</td>
<td>2.0                        1,055</td>
<td>2,461</td>
<td>0</td>
<td>0</td>
<td>3,516</td>
<td>Proceed to Business Case</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Montana-to-Washington Transmission System Upgrade Project</td>
<td>Transmission</td>
<td>Discretionary</td>
<td>1.6                        0    18,250    82,125</td>
<td>82,125</td>
<td>0</td>
<td>182,500 Cancelled</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power Constraint Management System (PCMS)</td>
<td>IT</td>
<td>Discretionary</td>
<td>0.5                        0    1,854      955   0</td>
<td>2,809</td>
<td>Examine alternatives</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Redmond MHQ Addition and Building Upgrade</td>
<td>Facilities</td>
<td>Discretionary</td>
<td>0.3                        0    0          1,238</td>
<td>3,713</td>
<td>7,425</td>
<td>12,375</td>
<td>Examine alternatives</td>
<td></td>
<td></td>
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<tr>
<td>Snohomish MHQ Upgrade</td>
<td>Facilities</td>
<td>Discretionary</td>
<td>0.2                        0    1,300      3,900</td>
<td>7,800</td>
<td>0</td>
<td>13,000</td>
<td>Examine alternatives</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Southern Idaho Communication Upgrade</td>
<td>Transmission</td>
<td>Discretionary</td>
<td>(0.1)                      0    0          1,400</td>
<td>4,900</td>
<td>700</td>
<td>7,000</td>
<td>Redefine scope of project</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lewiston MHQ Facility</td>
<td>Facilities</td>
<td>Discretionary</td>
<td>(0.5)                      0    0          1,119</td>
<td>10,069</td>
<td>11,188</td>
<td>Examine alternatives</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>L0322 Klondike-Blalock Reinforcement Mobile Transformer</td>
<td>Transmission</td>
<td>Discretionary</td>
<td>(0.5)                      0    0          1,663</td>
<td>0</td>
<td>0</td>
<td>1,663</td>
<td>Re-assess benefits</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sacajawea to Ice Harbor-Franklin 115kV #1 Line</td>
<td>Transmission</td>
<td>Discretionary</td>
<td>(1.0)                      0    0          173   2,770</td>
<td>519</td>
<td>3,463</td>
<td>Cancelled</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Structured Data Management (SDM)</td>
<td>IT</td>
<td>Discretionary</td>
<td>(1.1)                      0    1,080      1,620</td>
<td>0</td>
<td>0</td>
<td>2,700</td>
<td>Proceed to Inception Stage</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Business Systems Disaster Recovery</td>
<td>IT</td>
<td>Discretionary</td>
<td>(1.6)                      0    5,502      8,254</td>
<td>0</td>
<td>0</td>
<td>13,756</td>
<td>Tabled</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subtotal</td>
<td></td>
<td></td>
<td></td>
<td>2,305</td>
<td>38,258</td>
<td>109,025</td>
<td>114,576</td>
<td>34,429</td>
<td>298,592</td>
<td></td>
</tr>
</tbody>
</table>
## Prioritized Expansion Portfolio

*(Net Economic Benefits Ratio)*

<table>
<thead>
<tr>
<th>Investment Name</th>
<th>Asset Category</th>
<th>Investment Classification</th>
<th>Net Economic Benefit Ratio 2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>Later Years</th>
<th>Total</th>
<th>Next Steps</th>
</tr>
</thead>
<tbody>
<tr>
<td>Garrison East Transmission Project</td>
<td>Transmission</td>
<td>Discretionary</td>
<td>0</td>
<td>2,500</td>
<td>7,500</td>
<td>30,000</td>
<td>10,000</td>
<td>50,000</td>
<td>Deferred</td>
</tr>
<tr>
<td>Business Enterprise Services Strategy (BESS) Initiatives</td>
<td>IT</td>
<td>Discretionary</td>
<td>0</td>
<td>0</td>
<td>2,490</td>
<td>520</td>
<td>2,790</td>
<td>5,800</td>
<td>Examine alternatives</td>
</tr>
<tr>
<td>Business Intelligence Competency Center</td>
<td>IT</td>
<td>Discretionary</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2,100</td>
<td>0</td>
<td>2,100</td>
<td>Examine alternatives</td>
</tr>
<tr>
<td>Billing Information System Upgrade</td>
<td>IT</td>
<td>Discretionary</td>
<td>0</td>
<td>0</td>
<td>5,000</td>
<td>5,000</td>
<td>0</td>
<td>10,000</td>
<td>Examine alternatives</td>
</tr>
<tr>
<td>Boardman to Hemingway</td>
<td>Transmission</td>
<td>Discretionary</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>375,000</td>
<td>375,000</td>
<td>Assess benefits, examine alternatives</td>
</tr>
<tr>
<td>Capability Upgrades for Planning and Operations in Power Services</td>
<td>IT</td>
<td>Discretionary</td>
<td>0</td>
<td>1,440</td>
<td>4,616</td>
<td>4,616</td>
<td>9,232</td>
<td>20,004</td>
<td>Examine alternatives</td>
</tr>
<tr>
<td>EIM Potential Technology Enhancements</td>
<td>IT</td>
<td>Discretionary</td>
<td>0</td>
<td>0</td>
<td>850</td>
<td>850</td>
<td>0</td>
<td>6,800</td>
<td>8,500</td>
</tr>
<tr>
<td>Transmission Asset Portfolio Management System</td>
<td>IT</td>
<td>Discretionary</td>
<td>0</td>
<td>2,500</td>
<td>2,500</td>
<td>0</td>
<td>0</td>
<td>5,000</td>
<td>Define scope, assess costs and benefits</td>
</tr>
<tr>
<td>G0314 Interconnection of Thompson Falls Hydroelectric Project at Ashley Creek Substation</td>
<td>Transmission</td>
<td>Policy Commitment</td>
<td>0</td>
<td>0</td>
<td>1,781</td>
<td>7,719</td>
<td>2,375</td>
<td>11,875</td>
<td>Tabled</td>
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<tr>
<td>G0105/G0432 enXco's Desert Claim Wind Project</td>
<td>Transmission</td>
<td>Policy Commitment</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>563</td>
<td>0</td>
<td>10,688</td>
<td>11,250</td>
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<tr>
<td>Transmission Aggregated PFIA Projects LT $3M</td>
<td>Transmission</td>
<td>Policy Commitment</td>
<td>0</td>
<td>2,287</td>
<td>2,287</td>
<td>2,287</td>
<td>2,287</td>
<td>9,146</td>
<td>Proceed with projects, update cost estimates</td>
</tr>
<tr>
<td>G0361 Invernergy's Heppner Wind Stanfield</td>
<td>Transmission</td>
<td>Policy Commitment</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>3,750</td>
<td>21,250</td>
<td>25,000</td>
<td>Tabled</td>
</tr>
<tr>
<td>Transmission Aggregated A &amp; CS projects LT $3M</td>
<td>Transmission</td>
<td>Policy Commitment</td>
<td>0</td>
<td>625</td>
<td>625</td>
<td>0</td>
<td>0</td>
<td>1,250</td>
<td>Proceed with projects, update cost estimates</td>
</tr>
<tr>
<td>Monroe 500kV Reactor</td>
<td>Transmission</td>
<td>Policy Commitment</td>
<td>0</td>
<td>1,502</td>
<td>1,502</td>
<td>6,009</td>
<td>1,002</td>
<td>10,015</td>
<td>Assess benefits</td>
</tr>
<tr>
<td>ETC Scenario Analysis</td>
<td>IT</td>
<td>Discretionary</td>
<td>0</td>
<td>0</td>
<td>500</td>
<td>500</td>
<td>0</td>
<td>1,000</td>
<td>Examine alternatives</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td></td>
<td></td>
<td>0</td>
<td>10,954</td>
<td>29,651</td>
<td>63,913</td>
<td>441,423</td>
<td>545,940</td>
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</tr>
<tr>
<td><strong>Projects &quot;Green Lighted&quot; and in Prioritized Portfolio</strong></td>
<td></td>
<td></td>
<td>2,305</td>
<td>15,675</td>
<td>18,049</td>
<td>18,812</td>
<td>19,552</td>
<td>74,392</td>
<td></td>
</tr>
<tr>
<td><strong>Projects deferred, excluded until further assessment</strong></td>
<td></td>
<td></td>
<td>0</td>
<td>34,949</td>
<td>124,784</td>
<td>166,304</td>
<td>458,438</td>
<td>784,474</td>
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</tr>
<tr>
<td><strong>Total Prioritized Portfolio</strong></td>
<td></td>
<td></td>
<td>2,305</td>
<td>50,623</td>
<td>142,833</td>
<td>185,116</td>
<td>477,990</td>
<td>858,866</td>
<td></td>
</tr>
</tbody>
</table>
Incremental benefits by type for “green lighted” investments

Portfolio “Bang for the buck”

- Total investment (expected value, PV): $72.9 million
- Total net benefits (expected value, PV): $578.2 million
- Aggregate Net Economic Benefit Ratio: **7.9**
For investments assessed, SME’s were asked to provide a range of costs and benefits assuming that no investment were made, i.e., to help illuminate the costs that would be avoided if the investments were made
Then SME’s were asked to provide a range of costs and benefits assuming the investments were made, i.e., what are the upfront costs (capital and expense), what are the ongoing costs for the economic life of the investment, etc.
Incremental (net) costs and benefits over time (3)
“Green lighted” investments
(Nominal Expected Value)
Capital Investment – range of cost uncertainty by investment

[Graph showing expected value of nominal value, $ Millions, for various investment names like Structured Data Management, Transmission Aggregation, O&M Flex Project, Monroe 500kV Line Reconfiguration, ITSM - CMDB/AIM/ETS, ITSM-CMS Project, Spare Transformers, Transmission Aggregation, FY15 - FY17 PMUs, DeMoss-Fossil Shunt, etc., with range of cost uncertainty indicated by p10, EV, and p90.]
Total Economic Benefit – range of uncertainty by investment

Legend

- p10
- EV
- p90
Investment Prioritization
Next Steps
BPA plans to build upon the work done so far in implementing the expansion investment prioritization process through next steps . . .

- Focus on continuous improvement in process, people and tools
- Explore investment alternatives more fully
- Improve cost and benefit assessments for existing and new investment proposals
- Fully implement “Peer Reviews” to ensure consistency and quality of input assessments
- Enhance and improve existing models, add Federal Hydro
- Build internal capability through training and coaching
- Expand the coverage of the process
Next Steps for nominated and assessed investments (1)

<table>
<thead>
<tr>
<th>Project</th>
<th>Asset Category</th>
<th>Actions</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>DeMoss-Fossil Shunt Reactive</td>
<td>Transmission</td>
<td>“Green Light” - proceed to meet near-term compliance requirements</td>
<td>Prepare business case that sets project execution targets and risk mitigation plan. Project starts in FY 2015 and is estimated to cost $5.8 million</td>
</tr>
<tr>
<td>PMU FY 2015-2017 (Phasor Measurement Units)</td>
<td>Transmission</td>
<td>“Green Light” – proceed to meet near-term compliance requirements</td>
<td>Prepare business case that sets project execution targets and risk mitigation plan. Project starts in FY 2015 and is estimated to cost $5.4 million</td>
</tr>
<tr>
<td>Misc. Small Control Center Compliance Projects &lt; $3million</td>
<td>Transmission</td>
<td>“Green Light” – proceed to meet near-term compliance requirements</td>
<td>Prepare business case that sets project execution targets and risk mitigation plan. Project starts in FY 2015 and is estimated to cost $0.8 million</td>
</tr>
<tr>
<td>Misc. Small Substation Compliance project</td>
<td>Transmission</td>
<td>Defer decision</td>
<td>Project is not expected to start before FY 2017</td>
</tr>
<tr>
<td>CMDB/AIM/ETS-Configuration Mgmt CRM - Customer Relation Mgmt system CMS - Change Management System</td>
<td>IT</td>
<td>“Green Light” this suite of data base and applications</td>
<td>These projects show great promise in benefits because they deliver significant internal IT efficiencies when completed. The projects should proceed to the “Inception Phase”, then “Alternatives Phase”</td>
</tr>
<tr>
<td>Spare Transformers at Wind Generation substation sites: John Day, Central Ferry, Slatt and Rock Creek</td>
<td>Transmission</td>
<td>“Green Light” – proceed to prepare business cases for these projects</td>
<td>These investments have significant economic value.</td>
</tr>
<tr>
<td>Walla Walla Reinforcement</td>
<td>Transmission</td>
<td>“Green Light” – proceed to prepare business case</td>
<td>Validate avoided wheeling costs associated with this line build.</td>
</tr>
<tr>
<td>Monroe 500 kV Line Reretermination</td>
<td>Transmission</td>
<td>“Green Light” – proceed to prepare business case</td>
<td>Agency approval in FY 2014 with design/construction start in FY 2015</td>
</tr>
<tr>
<td>O&amp;M Flex –Carlton substation</td>
<td>Transmission</td>
<td>“Green Light” – proceed to prepare business case</td>
<td>Agency approval in FY 2014 with design/construction start in FY 2015</td>
</tr>
<tr>
<td>SDM – (Structured Data Management)</td>
<td>IT</td>
<td>“Green Light” – proceed to Inception Phase</td>
<td>This project has significant compliance components, starts in FY 2015 and is expected to cost $3.6 million</td>
</tr>
<tr>
<td>Montana to Washington 500 kV line Reinforcement &amp; Garrison East</td>
<td>Transmission</td>
<td>Removed at this time, examining alternatives</td>
<td></td>
</tr>
</tbody>
</table>
### Next Steps for nominated and assessed investments (2)

<table>
<thead>
<tr>
<th>Project</th>
<th>Asset Category</th>
<th>Actions</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monroe 500 kV Reactor</td>
<td>Transmission</td>
<td>Assess project benefits</td>
<td>Project costs have been assessed but not all the benefits</td>
</tr>
<tr>
<td>Klondike-Blalock Reinforcement Southern Idaho Communications</td>
<td>Transmission</td>
<td>Re-scoped, re-assess costs and benefits</td>
<td></td>
</tr>
<tr>
<td>Power Constraint Management System (PCMS)</td>
<td>IT</td>
<td>Re-scoped, re-assess costs and benefits</td>
<td></td>
</tr>
<tr>
<td>Maintenance HQ projects at: Redmond, Snohomish &amp; Lewiston</td>
<td>Facilities</td>
<td>Re-scoped, assess costs and benefits</td>
<td>Projects as originally scoped are not economic. Examine alternatives that reduce costs/increase benefits. Bring re-scoped projects back for further consideration in a future cycle.</td>
</tr>
<tr>
<td>LGIA projects: Heppner wind, Thompson Falls &amp; Desert Claim Wind</td>
<td>Transmission</td>
<td>Continue to monitor need for these investments</td>
<td>LGIA investments that is customer-driven with very low probability to start before FY 2018.</td>
</tr>
<tr>
<td>Aggregated projects &lt;$3 million</td>
<td>Transmission</td>
<td>“Green Light” - Proceed with investments as needed</td>
<td>These projects are classified as policy commitment</td>
</tr>
<tr>
<td>Sacajawea to Ice harbor-Franklin 115 kV #1 Line</td>
<td>Transmission</td>
<td>Table or cancel</td>
<td>Lacks adequate benefit to justify proceeding</td>
</tr>
<tr>
<td>Various IT investments nominated but not assessed BESS, BICC, CUPO, ETC, BISU, EIM and TAPM</td>
<td>IT</td>
<td>Continue to scope, identify alternatives and assess costs and benefits</td>
<td>Consider re-submitting revised projects in future investment evaluation cycle</td>
</tr>
<tr>
<td>Boardman to Hemingway</td>
<td>Transmission</td>
<td>Proceed to assess economics and evaluate alternatives</td>
<td></td>
</tr>
<tr>
<td>I-5</td>
<td>Transmission</td>
<td>Continue with NEPA</td>
<td></td>
</tr>
</tbody>
</table>
Capital Related Cost Analysis
Power Capital Forecast
Power Revenue Requirement Capital Related Costs Compared to GM Package, Annual Average Per Rate Period
Adjustments limited to interest, depreciation, MRNR resulting from change in capital forecast

![Graph showing Power Revenue Requirement Capital Related Costs compared to GM Package, Annual Average Per Rate Period. The graph includes data from 2013 Base Case, 2014 CIR Initial Forecast, and 2014 CIR Proposed Forecast, with data points from 2014/15 to 2043/44.]
Transmission Capital Forecast
Transmission Revenue Requirement Capital Related Costs Compared to GM Package, Annual Average Per Rate Period
Adjustments limited to interest, depreciation, MRNR resulting from change in capital forecast
Conclusions

• Investment prioritization, together with the Affordability Cap, should enable BPA to optimize its investment portfolio such that the funding demands of BPA’s aging infrastructure, statutory and regulatory obligations, and other investment drivers are balanced with the region’s capacity to absorb rate increases.

• BPA will continue to build upon and improve the capital investment prioritization process and expand coverage of investments

• BPA’s optimized long-term investment portfolio is not static and will be reviewed and updated on a six month cycle
Financial Disclosure

This information has been made publicly available by BPA on March 7, 2014 and contains information not reported in agency financial statements.