2013 Integrated Resource Plan

Portfolio Development Cases

Sensitivity Case Fact Sheets

February 27, 2013
Theme: Load Sensitivities

Sensitivity: S-1 (Low Load Forecast)

Description
Sensitivity S-1 will be completed assuming a low load forecast. This sensitivity is a variant of Core Case C-03 assuming Energy Gateway Scenario EG-2.

Forward Price Curve
Sensitivity S-1 gas and power prices will utilize medium natural gas and CO₂ price assumptions consistent with the Company’s September 28, 2012 official forward price curve.

Coal Fuel Costs
Medium coal prices will be used. The figure below shows the medium fleet-wide average coal costs.

Federal CO₂ Policy/Price Signal
Sensitivity S-1 includes medium CO₂ prices starting 2022 at $16/ton rising to approximately $26/ton by 2032.

Regional Haze
Sensitivity S-1 will apply base case Regional Haze investments patterned after known state implementation plan requirements and potential long-term requirements.

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Theme: Load Sensitivities
Sensitivity: S-1 (Low Load Forecast)

*SNCR = selective non-catalytic reduction; SCR = selective catalytic reduction; LNB = low NOx burner; BH = baghouse

Other Non-CO₂ Environmental Policy Assumptions
Sensitivity S-1 will include estimated costs to achieve compliance with the following:
- Mercury and Air Toxics (MATS)
- Coal Combustion Residuals (CCR) under subtitle D of RCRA
- Cooling water intake structures under §316(b) of the Clean Water Act

Federal RPS
Sensitivity S-1 will include the following federal RPS assumptions:
- Targets applied to retail sales (adjusted for non-qualifying hydro)
  - 4.5% in 2018
  - 7.1% in 2019 – 2020
  - 9.8% in 2021 – 2022
  - 12.4% in 2023 – 2024
  - 15% by 2025

State RPS
Known state RPS requirements with targets as a percentage of retail sales (by year-end but for WA, which is Jan 1st):
- CA: 20% through 2013, 25% by 2016, 33% by 2020
- OR: 5% by 2011; 15% by 2015; 20% by 2020, 25% by 2025
- WA: 3% by 2012; 9% by 2016; 15% by 2020
- UT: 20% of adjusted retail sales by 2025

Federal Tax Incentives
- PTCs expire end of 2012
- ITCs expire end of 2016

Energy Efficiency (Class 2 DSM)
Base case supply curves and ramp rates with resource selections up to the achievable potential. Class 2 resources that are not selected in any given year are not available for selection in future years. Achievable potential by state and year are summarized below.

Load Forecast
A low load forecast derived using low economic driver assumptions will be used. The figure below shows the change in system coincident peak as compared to the medium (base) load forecast before accounting for any potential contribution from DSM or distributed generation resources.

Resource Specific
There are no other specific resource constraints that apply to this sensitivity.
**Description**

Sensitivity S-2 will be completed assuming a high load forecast. This sensitivity is a variant of Core Case C-03 assuming Energy Gateway Scenario EG-2.

**Forward Price Curve**

Sensitivity S-2 gas and power prices will utilize medium natural gas and CO₂ price assumptions consistent with the Company’s September 28, 2012 official forward price curve.

**Coal Fuel Costs**

Medium coal prices will be used. The figure below shows the medium fleet-wide average coal costs.

**Federal CO₂ Policy/Price Signal**

Sensitivity S-2 includes medium CO₂ prices starting 2022 at $16/ton rising to approximately $26/ton by 2032.

**Regional Haze**

Sensitivity S-2 will apply base case Regional Haze investments patterned after known state implementation plan requirements and potential long-term requirements.

### Coal Unit Investments

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**Theme: Load Sensitivities**

**Sensitivity: S-2 (High Load Forecast)**

*S*NCR = selective non-catalytic reduction; SCR = selective catalytic reduction; LNB = low NOx burner; BH = baghouse

**Other Non-CO₂ Environmental Policy Assumptions**

Sensitivity S-2 will include estimated costs to achieve compliance with the following:

- Mercury and Air Toxics (MATS)
- Coal Combustion Residuals (CCR) under subtitle D of RCRA
- Cooling water intake structures under §316(b) of the Clean Water Act

**Federal RPS**

Sensitivity S-2 will include the following federal RPS assumptions:

- Targets applied to retail sales (adjusted for non-qualifying hydro)
- 4.5% in 2018
- 7.1% in 2019 – 2020
- 9.8% in 2021 – 2022
- 12.4% in 2023 – 2024
- 15% by 2025

**State RPS**

Known state RPS requirements with targets as a percentage of retail sales (by year-end but for WA, which is Jan 1st):

- CA: 20% through 2013, 25% by 2016, 33% by 2020
- OR: 5% by 2011; 15% by 2015; 20% by 2020, 25% by 2025
- WA: 3% by 2012; 9% by 2016; 15% by 2020
- UT: 20% of adjusted retail sales by 2025

**Federal Tax Incentives**

- PTCs expire end of 2012
- ITCs expire end of 2016
Theme: Load Sensitivities
Sensitivity: S-3 (1 in 20 Load)

Description
Sensitivity S-3 will be completed assuming a 1 in 20 load forecast. This sensitivity is a variant of Core Case C-03 assuming Energy Gateway Scenario EG-2.

Forward Price Curve
Sensitivity S-3 gas and power prices will utilize medium natural gas and CO\textsubscript{2} price assumptions consistent with the Company’s September 28, 2012 official forward price curve.

Coal Fuel Costs
Medium coal prices will be used. The figure below shows the medium fleet-wide average coal costs.

Federal CO\textsubscript{2} Policy/Price Signal
Sensitivity S-3 includes medium CO\textsubscript{2} prices starting 2022 at $16/ton rising to approximately $26/ton by 2032.

Regional Haze
Sensitivity S-3 will apply base case Regional Haze investments patterned after known state implementation plan requirements and potential long-term requirements.

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**Theme: Load Sensitivities**

**Sensitivity: S-3 (1 in 20 Load)**

*SNCR = selective non-catalytic reduction; SCR = selective catalytic reduction; LNB = low NOx burner; BH = baghouse

**Other Non-CO₂ Environmental Policy Assumptions**

Sensitivity S-3 will include estimated costs to achieve compliance with the following:

- Mercury and Air Toxics (MATS)
- Coal Combustion Residuals (CCR) under subtitle D of RCRA
- Cooling water intake structures under §316(b) of the Clean Water Act

**Federal RPS**

Sensitivity S-3 will include the following federal RPS assumptions:

- Targets applied to retail sales (adjusted for non-qualifying hydro)
- 4.5% in 2018
- 7.1% in 2019 – 2020
- 9.8% in 2021 – 2022
- 12.4% in 2023 – 2024
- 15% by 2025

**State RPS**

Known state RPS requirements with targets as a percentage of retail sales (by year-end but for WA, which is Jan 1°):

- CA: 20% through 2013, 25% by 2016, 33% by 2020
- OR: 5% by 2011; 15% by 2015; 20% by 2020, 25% by 2025
- WA: 3% by 2012; 9% by 2016; 15% by 2020
- UT: 20% of adjusted retail sales by 2025

**Federal Tax Incentives**

- PTCs expire end of 2012
- ITCs expire end of 2016

**Energy Efficiency (Class 2 DSM)**

Base case supply curves and ramp rates with resource selections up to the achievable potential. Class 2 resources that are not selected in any given year are not available for selection in future years. Achievable potential by state and year are summarized below.

**Load Forecast**

A 1 in 20 load forecast reflecting the top peak producing weather over the past 20 years will be used. The figure below shows the change in system coincident peak as compared to the medium (base) load forecast before accounting for any potential contribution from DSM or distributed generation resources.

**Resource Specific**

There are no other specific resource constraints that apply to this sensitivity.
**Theme: Environmental Policy Sensitivities**

**Sensitivity: S-4 (Hypothetical Regional Haze Compliance Alternative)**

**Description**
Sensitivity S-4 will explore hypothetical compliance alternatives to near-term Regional Haze-based emissions control investments. For this sensitivity, it is assumed that near-term SCR investments currently required at Jim Bridger Units 3&4 and at Cholla Unit 4 can be avoided if a commitment is made to retire those coal units early. The selection of hypothetical retirement dates in this sensitivity is informed by an evaluation of the cost per ton of pollutant removed; much the same as such information would be factored into a BART analysis. This sensitivity is a variant of Core Case C-03 assuming Energy Gateway Scenario EG-2. The results of Sensitivity S-4 will be presented in Confidential Volume 3 of the 2013 IRP.

**Forward Price Curve**
Sensitivity S-4 gas and power prices will utilize medium natural gas and CO₂ price assumptions consistent with the Company’s September 28, 2012 official forward price curve.

**Coal Fuel Costs**
Medium coal prices will be used. The figure below shows the medium fleet-wide average coal costs.

**Federal CO₂ Policy/Price Signal**
Sensitivity S-4 includes medium CO₂ prices starting 2022 at $16/ton rising to approximately $26/ton by 2032.

**Regional Haze**
For those units that are not being analyzed as part of this sensitivity, base case Regional Haze investments patterned after known state implementation plan requirements and potential long-term requirements will be applied.

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*SNCR = selective non-catalytic reduction; SCR = selective catalytic reduction; LNB = low NOx burner; BH = baghouse
Theme: Environmental Policy Sensitivities

Sensitivity: S-4 (Hypothetical Regional Haze Compliance Alternative)

Other Non-CO₂ Environmental Policy Assumptions
Sensitivity S-4 will include estimated costs to achieve compliance with the following:
- Mercury and Air Toxics (MATS)
- Coal Combustion Residuals (CCR) under subtitle D of RCRA
- Cooling water intake structures under §316(b) of the Clean Water Act

Federal RPS
Sensitivity S-4 will include the following federal RPS assumptions:
- Targets applied to retail sales (adjusted for non-qualifying hydro)
  - 4.5% in 2018
  - 7.1% in 2019 – 2020
  - 9.8% in 2021 – 2022
  - 12.4% in 2023 – 2024
  - 15% by 2025

State RPS
Known state RPS requirements with targets as a percentage of retail sales (by year-end but for WA, which is Jan 1st):
- CA: 20% through 2013, 25% by 2016, 33% by 2020
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- UT: 20% of adjusted retail sales by 2025

Federal Tax Incentives
- PTCs expire end of 2012
- ITCs expire end of 2016

Energy Efficiency (Class 2 DSM)
Base case supply curves and ramp rates with resource selections up to the achievable potential. Class 2 resources that are not selected in any given year are not available for selection in future years. Achievable potential by state and year are summarized below.

Load Forecast
The medium load forecast will be used. The figure below shows the system coincident peak load forecast before accounting for any potential contribution from DSM or distributed generation resources.

Resource Specific
The Jim Bridger Unit 3 and Unit 4 S-4 Sensitivity will assume that if Units 3 and 4 are retired at the end of 2020 and 2021, respectively, SCR investments currently required in 2015 and 2016 can be avoided. The selection of the hypothetical retirement dates of 2020 and 2021 in this sensitivity is informed by an evaluation of the cost per ton of pollutant removed. In the case of Jim Bridger Units 3 and 4, the cost per ton of pollutantremoved does not exceed a value that would likely be deemed excessive by EPA until the outer most years of unit operation. As such, a second criterion limiting the hypothetically negotiable compliance delay window to 5-years beyond the current compliance deadline is applied.

The Cholla 4 S-4 Sensitivity will assume that the unit is retired at the end of 2023 and that the SCR investment required in 2017 can be avoided. Again, the selection of the hypothetical retirement date of 2023 in this sensitivity is informed by an evaluation of the cost per ton of pollutant removed. In this case, the cost per ton of pollutant removed begins an upward trend in 2023 that that hypothetically could be deemed excessive by EPA. As such, a second criterion limiting the hypothetically negotiable compliance delay window to 5-years beyond the current compliance deadline is not applied.
**Title:** Environmental Policy Sensitivities

**Sensitivity: S-X (Emissions Control PVRR(d) Analysis)**

**Description**
Sensitivity S-X will be used to report the present value revenue requirement differential (PVRR(d)) associated with near-term emissions control investments. The PVRR(d) sensitivities will focus on near-term emissions control investments required for Hunter 1 (baghouse & low NOx burners), Jim Bridger Units 3&4 (SCRs) and at Cholla Unit 4 (SCR). This sensitivity is a variant of Core Case C-03 assuming Energy Gateway Scenario EG-2. The results of Sensitivity S-X will be presented in Confidential Volume 3 of the 2013 IRP.

**Forward Price Curve**
Sensitivity S-X gas and power prices will utilize medium natural gas and CO2 price assumptions consistent with the Company’s September 28, 2012 official forward price curve.

**Coal Fuel Costs**
Medium coal prices will be used. The figure below shows the medium fleet-wide average coal costs.

**Federal CO2 Policy/Price Signal**
Sensitivity S-X includes medium CO2 prices starting 2022 at $16/ton rising to approximately $26/ton by 2032.

**Regional Haze**
Sensitivity S-X will apply base case Regional Haze investments patterned after known state implementation plan requirements and potential long-term requirements.

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Theme: Environmental Policy Sensitivities  
Sensitivity: S-X (Emissions Control PVRR(d) Analysis)

*SNCR = selective non-catalytic reduction; SCR = selective catalytic reduction; LNB = low NOx burner; BH = baghouse

Other Non-CO₂ Environmental Policy Assumptions
Sensitivity S-X will include estimated costs to achieve compliance with the following:
- Mercury and Air Toxics (MATS)
- Coal Combustion Residuals (CCR) under subtitle D of RCRA
- Cooling water intake structures under §316(b) of the Clean Water Act

Federal RPS
Sensitivity S-X will include the following federal RPS assumptions:
- Targets applied to retail sales (adjusted for non-qualifying hydro)
  - 4.5% in 2018
  - 7.1% in 2019 – 2020
  - 9.8% in 2021 – 2022
  - 12.4% in 2023 – 2024
  - 15% by 2025

State RPS
Known state RPS requirements with targets as a percentage of retail sales (by year-end but for WA, which is Jan 1st):
- CA: 20% through 2013, 25% by 2016, 33% by 2020
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Federal Tax Incentives
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- ITCs expire end of 2016

Energy Efficiency (Class 2 DSM)
Base case supply curves and ramp rates with resource selections up to the achievable potential. Class 2 resources that are not selected in any given year are not available for selection in future years. Achievable potential by state and year are summarized below.

Load Forecast
The medium load forecast will be used. The figure below shows the system coincident peak load forecast before accounting for any potential contribution from DSM or distributed generation resources.

Resource Specific
This sensitivity will be used to analyze the PVRR(d) of emissions control investments required at Hunter 1, Jim Bridger Units 3&4, and Cholla 4. To arrive at the PVRR(d) results, these units will be required to cease coal-fueled operation as an alternative to the required investments. The System Optimizer model will endogenously establish the prospective alternative – gas conversion or early retirement.
Theme: Targeted Resource Sensitivities

Sensitivity: S-5 (PTC/ITC Extension, No RPS)

Description
Sensitivity S-5 will assume that federal tax incentives for renewable resources will be extended through 2019 and will not include any state or Federal RPS assumptions. This sensitivity is a variant of Core Case C-01 assuming Energy Gateway Scenario EG-2.

Forward Price Curve
Sensitivity S-5 gas and power prices will utilize medium natural gas and CO$_2$ price assumptions consistent with the Company’s September 28, 2012 official forward price curve.

Coal Fuel Costs
Medium coal prices will be used. The figure below shows the medium fleet-wide average coal costs.

Federal CO$_2$ Policy/Price Signal
Sensitivity S-5 includes medium CO$_2$ prices starting 2022 at $16/ton rising to approximately $26/ton by 2032.

Regional Haze
Sensitivity S-5 will apply base case Regional Haze investments patterned after known state implementation plan requirements and potential long-term requirements.

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<td>SCR</td>
<td>2022</td>
</tr>
<tr>
<td>J. Bridger 2</td>
<td>WY</td>
<td>SCR</td>
<td>2021</td>
</tr>
<tr>
<td>J. Bridger 3</td>
<td>WY</td>
<td>SCR</td>
<td>2015</td>
</tr>
<tr>
<td>J. Bridger 4</td>
<td>WY</td>
<td>SCR</td>
<td>2016</td>
</tr>
<tr>
<td>Hunter 1</td>
<td>UT</td>
<td>BH, LNB</td>
<td>2014</td>
</tr>
<tr>
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<td>Huntington 2</td>
<td>UT</td>
<td>SCR</td>
<td>2023</td>
</tr>
<tr>
<td>Hayden 1</td>
<td>CO</td>
<td>SCR</td>
<td>2015</td>
</tr>
<tr>
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<td>SCR</td>
<td>2016</td>
</tr>
<tr>
<td>Cholla 1</td>
<td>AZ</td>
<td>SCR</td>
<td>2017</td>
</tr>
</tbody>
</table>
Theme: Targeted Resource Sensitivities
Sensitivity: S-5 (PTC/ITC Extension, No RPS)

*SNCR = selective non-catalytic reduction; SCR = selective catalytic reduction; LNB = low NOx burner; BH = baghouse

Other Non-CO₂ Environmental Policy Assumptions
Sensitivity S-5 will include estimated costs to achieve compliance with the following:
- Mercury and Air Toxics (MATS)
- Coal Combustion Residuals (CCR) under subtitle D of RCRA
- Cooling water intake structures under §316(b) of the Clean Water Act

Federal RPS
Sensitivity S-5 does not include any federal RPS requirements.

State RPS
Sensitivity S-5 does not include any state RPS requirements.

Federal Tax Incentives
- PTCs extended through 2019
- ITCs extended through 2019

Energy Efficiency (Class 2 DSM)
Base case supply curves and ramp rates with resource selections up to the achievable potential. Class 2 resources that are not selected in any given year are not available for selection in future years. Achievable potential by state and year are summarized below.

Resource Specific
There are no other specific resource constraints that will be applied to this sensitivity.

Load Forecast
The medium load forecast will be used. The figure below shows the system coincident peak load forecast before accounting for any potential contribution from DSM or distributed generation resources.
Theme: Targeted Resource Sensitivities
Sensitivity: S-6 (PTC/ITC Extension, With RPS)

Description
Sensitivity S-6 will assume that federal tax incentives for renewable resources will be extended through 2019 and will include known state and prospective Federal RPS assumptions. This sensitivity is a variant of Core Case C-03 assuming Energy Gateway Scenario EG-2.

Forward Price Curve
Sensitivity S-6 gas and power prices will utilize medium natural gas and CO$_2$ price assumptions consistent with the Company’s September 28, 2012 official forward price curve.

Coal Fuel Costs
Medium coal prices will be used. The figure below shows the medium fleet-wide average coal costs.

Federal CO$_2$ Policy/Price Signal
Sensitivity S-6 includes medium CO$_2$ prices starting 2022 at $16/ton rising to approximately $26/ton by 2032.

Regional Haze
Sensitivity S-6 will apply base case Regional Haze investments patterned after known state implementation plan requirements and potential long-term requirements.

<table>
<thead>
<tr>
<th>Coal Unit</th>
<th>State</th>
<th>Technology*</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>J. Bridger 1</td>
<td>WY</td>
<td>SCR</td>
<td>2022</td>
</tr>
<tr>
<td>J. Bridger 2</td>
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<td>SCR</td>
<td>2021</td>
</tr>
<tr>
<td>J. Bridger 3</td>
<td>WY</td>
<td>SCR</td>
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</tr>
<tr>
<td>J. Bridger 4</td>
<td>WY</td>
<td>SCR</td>
<td>2016</td>
</tr>
<tr>
<td>Hunter 1</td>
<td>UT</td>
<td>BH, LNB</td>
<td>2014</td>
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<tr>
<td>Hunter 2</td>
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<td>SCR</td>
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<td>SCR</td>
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<td>SCR</td>
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<td>UT</td>
<td>SCR</td>
<td>2023</td>
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<tr>
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<tr>
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<td>SCR</td>
<td>2016</td>
</tr>
<tr>
<td>Craig 1</td>
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</tr>
<tr>
<td>Cholla 4</td>
<td>AZ</td>
<td>SCR</td>
<td>2017</td>
</tr>
</tbody>
</table>
Theme: Targeted Resource Sensitivities
Sensitivity: S-6 (PTC/ITC Extension, With RPS)

*SNCR = selective non-catalytic reduction; SCR = selective catalytic reduction; LNB = low NOx burner; BH = baghouse

Other Non-CO₂ Environmental Policy Assumptions
Sensitivity S-6 will include estimated costs to achieve compliance with the following:
- Mercury and Air Toxics (MATS)
- Coal Combustion Residuals (CCR) under subtitle D of RCRA
- Cooling water intake structures under §316(b) of the Clean Water Act

Federal RPS
Sensitivity S-6 will include the following federal RPS assumptions:
- Targets applied to retail sales (adjusted for non-qualifying hydro)
- 4.5% in 2018
- 7.1% in 2019 – 2020
- 9.8% in 2021 – 2022
- 12.4% in 2023 – 2024
- 15% by 2025

State RPS
Known state RPS requirements with targets as a percentage of retail sales (by year-end but for WA, which is Jan 1st):
- CA: 20% through 2013, 25% by 2016, 33% by 2020
- OR: 5% by 2011; 15% by 2015; 20% by 2020, 25% by 2025
- WA: 3% by 2012; 9% by 2016; 15% by 2020
- UT: 20% of adjusted retail sales by 2025

Federal Tax Incentives
- PTCs extended through 2019
- ITCs extended through 2019

Energy Efficiency (Class 2 DSM)
Base case supply curves and ramp rates with resource selections up to the achievable potential. Class 2 resources that are not selected in any given year are not available for selection in future years. Achievable potential by state and year are summarized below.

<table>
<thead>
<tr>
<th>Year</th>
<th>State</th>
<th>Achievable Potential (MW)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>UT</td>
<td>250</td>
</tr>
<tr>
<td>2014</td>
<td>OR</td>
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</tr>
<tr>
<td>2015</td>
<td>WA</td>
<td>400</td>
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<tr>
<td>2016</td>
<td>WY</td>
<td>500</td>
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<td>2017</td>
<td>ID</td>
<td>600</td>
</tr>
<tr>
<td>2018</td>
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<tr>
<td>2019</td>
<td></td>
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<td>2020</td>
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<td>2023</td>
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<td>1,200</td>
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<td>2024</td>
<td></td>
<td>1,300</td>
</tr>
<tr>
<td>2025</td>
<td></td>
<td>1,400</td>
</tr>
</tbody>
</table>

Load Forecast
The medium load forecast will be used. The figure below shows the system coincident peak load forecast before accounting for any potential contribution from DSM or distributed generation resources.

Resource Specific
There are no other specific resource constraints that will be applied to this sensitivity.
Theme: Targeted Resource Sensitivities
Sensitivity: S-7 (Endogenous RPS Compliance)

Description
Sensitivity S-7 will be completed using the RPS compliance logic built into the System Optimizer model. System level RPS requirements will be used as inputs and renewable resources will be added endogenously by the System Optimizer model. This sensitivity is a variant of Core Case C-03 assuming Energy Gateway Scenario EG-2.

Forward Price Curve
Sensitivity S-7 gas and power prices will utilize medium natural gas and CO₂ price assumptions consistent with the Company’s September 28, 2012 official forward price curve.

Coal Fuel Costs
Medium coal prices will be used. The figure below shows the medium fleet-wide average coal costs.

Nominal Average Annual Henry Hub Gas Prices

Nominal Average Annual Power Prices (Flat)

Federal CO₂ Policy/Price Signal
Sensitivity S-7 includes medium CO₂ prices starting 2022 at $16/ton rising to approximately $26/ton by 2032.

Nominal Federal CO₂ Prices

Regional Haze
Sensitivity S-7 will apply base case Regional Haze investments patterned after known state implementation plan requirements and potential long-term requirements.

<table>
<thead>
<tr>
<th>Coal Unit</th>
<th>State</th>
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<td>2022</td>
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<td>J. Bridger 2</td>
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<td>SCR</td>
<td>2021</td>
</tr>
<tr>
<td>J. Bridger 3</td>
<td>WY</td>
<td>SCR</td>
<td>2015</td>
</tr>
<tr>
<td>J. Bridger 4</td>
<td>WY</td>
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<td>Hunter 2</td>
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<td>UT</td>
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<td>2023</td>
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<td>Hayden 1</td>
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<td>2015</td>
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<tr>
<td>Hayden 2</td>
<td>CO</td>
<td>SCR</td>
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<tr>
<td>Craig 1</td>
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<td>Craig 2</td>
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<td>2016</td>
</tr>
<tr>
<td>Cholla 4</td>
<td>AZ</td>
<td>SCR</td>
<td>2017</td>
</tr>
</tbody>
</table>
Theme: Targeted Resource Sensitivities

Sensitivity: S-7 (Endogenous RPS Compliance)

*SNCR = selective non-catalytic reduction; SCR = selective
catalytic reduction; LNB = low NOx burner; BH = baghouse

**Other Non-CO₂ Environmental Policy Assumptions**

Sensitivity S-7 will include estimated costs to achieve compliance with the following:
- Mercury and Air Toxics (MATS)
- Coal Combustion Residuals (CCR) under subtitle D of RCRA
- Cooling water intake structures under §316(b) of the Clean Water Act

**Federal RPS**

Sensitivity S-7 will include the following federal RPS assumptions:
- Targets applied to retail sales (adjusted for non-qualifying hydro)
- 4.5% in 2018
- 7.1% in 2019 – 2020
- 9.8% in 2021 – 2022
- 12.4% in 2023 – 2024
- 15% by 2025

**State RPS**

Known state RPS requirements with targets as a percentage of retail sales (by year-end but for WA, which is Jan 1st):
- CA: 20% through 2013, 25% by 2016, 33% by 2020
- OR: 5% by 2011; 15% by 2015; 20% by 2020, 25% by 2025
- WA: 3% by 2012; 9% by 2016; 15% by 2020
- UT: 20% of adjusted retail sales by 2025

**Federal Tax Incentives**

- PTCs expire end of 2012
- ITCs expire end of 2016

**Energy Efficiency (Class 2 DSM)**

Base case supply curves and ramp rates with resource selections up to the achievable potential. Class 2 resources that are not selected in any given year are not available for selection in future years. Achievable potential by state and year are summarized below.

**Load Forecast**

The medium load forecast will be used. The figure below shows the system coincident peak load forecast before accounting for any potential contribution from DSM or distributed generation resources.

**Resource Specific**

There are no other specific resource constraints that will be applied to this case.
Description
Sensitivity S-8 will be completed with the resource portfolio from the Company’s 2013 business plan and DSM resources re-optimized. This sensitivity is a variant of Core Case C-03 assuming Energy Gateway Scenario EG-2.

Forward Price Curve
Sensitivity S-8 gas and power prices will utilize medium natural gas and CO₂ price assumptions consistent with the Company’s September 28, 2012 official forward price curve.

Coal Fuel Costs
Medium coal prices will be used. The figure below shows the medium fleet-wide average coal costs.

Federal CO₂ Policy/Price Signal
Sensitivity S-8 includes medium CO₂ prices starting 2022 at $16/ton rising to approximately $26/ton by 2032.

Regional Haze
Sensitivity S-8 will apply base case Regional Haze investments patterned after known state implementation plan requirements and potential long-term requirements.

<table>
<thead>
<tr>
<th>Coal Unit</th>
<th>State</th>
<th>Technology*</th>
<th>Year</th>
</tr>
</thead>
<tbody>
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<td>J. Bridger 1</td>
<td>WY</td>
<td>SCR</td>
<td>2022</td>
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<td>WY</td>
<td>SCR</td>
<td>2021</td>
</tr>
<tr>
<td>J. Bridger 3</td>
<td>WY</td>
<td>SCR</td>
<td>2015</td>
</tr>
<tr>
<td>J. Bridger 4</td>
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<td>SCR</td>
<td>2016</td>
</tr>
<tr>
<td>Hunter 1</td>
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<td>BH, LNB</td>
<td>2014</td>
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<tr>
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<td>SCR</td>
<td>2026</td>
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<tr>
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<td>UT</td>
<td>SCR</td>
<td>2023</td>
</tr>
<tr>
<td>Hayden 1</td>
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<td>SCR</td>
<td>2015</td>
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<tr>
<td>Hayden 2</td>
<td>CO</td>
<td>SCR</td>
<td>2016</td>
</tr>
<tr>
<td>Craig 1</td>
<td>CO</td>
<td>SNCR</td>
<td>2017</td>
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<tr>
<td>Craig 2</td>
<td>CO</td>
<td>SCR</td>
<td>2016</td>
</tr>
<tr>
<td>Cholla 4</td>
<td>AZ</td>
<td>SCR</td>
<td>2017</td>
</tr>
</tbody>
</table>
Theme: Targeted Resource Sensitivities

*SNCR = selective non-catalytic reduction; SCR = selective catalytic reduction; LNB = low NOx burner; BH = baghouse

Other Non-CO₂ Environmental Policy Assumptions
Sensitivity S-8 will include estimated costs to achieve compliance with the following:
- Mercury and Air Toxics (MATS)
- Coal Combustion Residuals (CCR) under subtitle D of RCRA
- Cooling water intake structures under §316(b) of the Clean Water Act

Federal RPS
Sensitivity S-8 will include the following federal RPS assumptions:
- Targets applied to retail sales (adjusted for non-qualifying hydro)
- 4.5% in 2018
- 7.1% in 2019 – 2020
- 9.8% in 2021 – 2022
- 12.4% in 2023 – 2024
- 15% by 2025

State RPS
Known state RPS requirements with targets as a percentage of retail sales (by year-end but for WA, which is Jan 1st):
- CA: 20% through 2013, 25% by 2016, 33% by 2020
- OR: 5% by 2011; 15% by 2015; 20% by 2020, 25% by 2025
- WA: 3% by 2012; 9% by 2016; 15% by 2020
- UT: 20% of adjusted retail sales by 2025

Federal Tax Incentives
- PTCs expire end of 2012
- ITCs expire end of 2016

Energy Efficiency (Class 2 DSM)
Base case supply curves and ramp rates with resource selections up to the achievable potential. Class 2 resources that are not selected in any given year are not available for selection in future years. Achievable potential by state and year are summarized below.

Load Forecast
The medium load forecast will be used. The figure below shows the system coincident peak load forecast before accounting for any potential contribution from DSM or distributed generation resources.

Resource Specific
The resource expansion plan included in the 2013 Business Plan will be forced and DSM resources re-optimized.
**Theme: Targeted Resource Sensitivities**

**Sensitivity: S-9 (Targeted Renewable Resources)**

**Description**
Sensitivity S-9 will include market price assumptions (high gas, high CO$_2$) and federal tax incentive assumptions (extension of PTCs/ITCs) favorable to renewable resource additions. This sensitivity is a variant of Core Case C-03 assuming Energy Gateway Scenario EG-2.

**Forward Price Curve**
Sensitivity S-9 gas and power prices are summarized alongside the medium case September 2012 forward price curve in the figures below.

**Coal Fuel Costs**
Medium coal prices will be used. The figure below shows the medium fleet-wide average coal costs.

**Federal CO$_2$ Policy/Price Signal**
Sensitivity S-9 includes high CO$_2$ prices starting 2020 at approximately $14/ton rising to approximately $75/ton by 2032. The high CO$_2$ prices are shown alongside the medium CO$_2$ price assumptions in the figure below.

**Regional Haze**
Sensitivity S-9 will apply base case Regional Haze investments patterned after known state implementation plan requirements and potential long-term requirements.

<table>
<thead>
<tr>
<th>Coal Unit</th>
<th>State</th>
<th>Technology*</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>J. Bridger 1</td>
<td>WY</td>
<td>SCR</td>
<td>2022</td>
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<tr>
<td>J. Bridger 2</td>
<td>WY</td>
<td>SCR</td>
<td>2021</td>
</tr>
<tr>
<td>J. Bridger 3</td>
<td>WY</td>
<td>SCR</td>
<td>2015</td>
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<tr>
<td>J. Bridger 4</td>
<td>WY</td>
<td>SCR</td>
<td>2016</td>
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<tr>
<td>Hunter 1</td>
<td>UT</td>
<td>BH, LNB</td>
<td>2014</td>
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<tr>
<td>Hunter 2</td>
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<td>2024</td>
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<tr>
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<tr>
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<td>SCR</td>
<td>2015</td>
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<tr>
<td>Hayden 2</td>
<td>CO</td>
<td>SCR</td>
<td>2016</td>
</tr>
<tr>
<td>Craig 1</td>
<td>CO</td>
<td>SNCR</td>
<td>2017</td>
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<tr>
<td>Craig 2</td>
<td>CO</td>
<td>SCR</td>
<td>2016</td>
</tr>
</tbody>
</table>
Theme: Targeted Resource Sensitivities
Sensitivity: S-9 (Targeted Renewable Resources)

<table>
<thead>
<tr>
<th>Cholla 4</th>
<th>AZ</th>
<th>SCR</th>
<th>2017</th>
</tr>
</thead>
</table>

*SNCR = selective non-catalytic reduction; SCR = selective catalytic reduction; LNB = low NOx burner; BH = baghouse

Other Non-CO₂ Environmental Policy Assumptions
Sensitivity S-9 will include estimated costs to achieve compliance with the following:
- Mercury and Air Toxics (MATS)
- Coal Combustion Residuals (CCR) under subtitle D of RCRA
- Cooling water intake structures under §316(b) of the Clean Water Act

Federal RPS
Sensitivity S-9 will include the following federal RPS assumptions:
- Targets applied to retail sales (adjusted for non-qualifying hydro)
- 4.5% in 2018
- 7.1% in 2019 – 2020
- 9.8% in 2021 – 2022
- 12.4% in 2023 – 2024
- 15% by 2025

State RPS
Known state RPS requirements with targets as a percentage of retail sales (by year-end but for WA, which is Jan 1st):
- CA: 20% through 2013, 25% by 2016, 33% by 2020
- OR: 5% by 2011; 15% by 2015; 20% by 2020, 25% by 2025
- WA: 3% by 2012; 9% by 2016; 15% by 2020
- UT: 20% of adjusted retail sales by 2025

Federal Tax Incentives
- PTCs extended through 2019
- ITCs extended through 2019

Energy Efficiency (Class 2 DSM)
Base case supply curves and ramp rates with resource selections up to the achievable potential. Class 2 resources that are not selected in any given year are not available for selection in future years. Achievable potential by state and year are summarized below.

Class 2 DSM Cumulative Achievable Potential

Load Forecast
The medium load forecast will be used. The figure below shows the system coincident peak load forecast before accounting for any potential contribution from DSM or distributed generation resources.

Coincident System Peak Load

Resource Specific
There are no other specific resource constraints that will be applied to this case.
Theme: Targeted Resource Sensitivities
Sensitivity: S-10 (Class 3 DSM)

Description
Sensitivity S-10 will include Class 3 DSM resource alternatives. This sensitivity is a variant of Core Case C-03 assuming Energy Gateway Scenario EG-2.

Forward Price Curve
Sensitivity S-10 gas and power prices will utilize medium natural gas and CO₂ price assumptions consistent with the Company’s September 28, 2012 official forward price curve.

Coal Fuel Costs
Medium coal prices will be used. The figure below shows the medium fleet-wide average coal costs.

Federal CO₂ Policy/Price Signal
Sensitivity S-10 includes medium CO₂ prices starting 2022 at $16/ton rising to approximately $26/ton by 2032.

Regional Haze
Sensitivity S-10 will apply base case Regional Haze investments patterned after known state implementation plan requirements and potential long-term requirements.

<table>
<thead>
<tr>
<th>Coal Unit</th>
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<th>Technology*</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>J. Bridger 1</td>
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<td>2021</td>
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<td>J. Bridger 3</td>
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<tr>
<td>J. Bridger 4</td>
<td>WY</td>
<td>SCR</td>
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<tr>
<td>Hunter 1</td>
<td>UT</td>
<td>BH, LNB</td>
<td>2014</td>
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<td>Hunter 2</td>
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<td>SCR</td>
<td>2023</td>
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<tr>
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<td>UT</td>
<td>SCR</td>
<td>2024</td>
</tr>
<tr>
<td>Huntington 1</td>
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<td>SCR</td>
<td>2026</td>
</tr>
<tr>
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<td>SCR</td>
<td>2023</td>
</tr>
<tr>
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<td>CO</td>
<td>SCR</td>
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<tr>
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<tr>
<td>Cholla 4</td>
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</tbody>
</table>

February 27, 2013
Theme: Targeted Resource Sensitivities  
Sensitivity: S-10 (Class 3 DSM)

*SNCR = selective non-catalytic reduction; SCR = selective catalytic reduction; LNB = low NOx burner; BH = baghouse

Other Non-CO₂, Environmental Policy Assumptions
Sensitivity S-10 will include estimated costs to achieve compliance with the following:
- Mercury and Air Toxics (MATS)
- Coal Combustion Residuals (CCR) under subtitle D of RCRA
- Cooling water intake structures under §316(b) of the Clean Water Act

Federal RPS
Sensitivity S-10 will include the following federal RPS assumptions:
- Targets applied to retail sales (adjusted for non-qualifying hydro)
- 4.5% in 2018
- 7.1% in 2019 – 2020
- 9.8% in 2021 – 2022
- 12.4% in 2023 – 2024
- 15% by 2025

State RPS
Known state RPS requirements with targets as a percentage of retail sales (by year-end but for WA, which is Jan 1st):
- CA: 20% through 2013, 25% by 2016, 33% by 2020
- OR: 5% by 2011; 15% by 2015; 20% by 2020, 25% by 2025
- WA: 3% by 2012; 9% by 2016; 15% by 2020
- UT: 20% of adjusted retail sales by 2025

Federal Tax Incentives
- PTCs expire end of 2012
- ITCs expire end of 2016

Energy Efficiency (Class 2 and Class 3 DSM)
Base case supply curves and ramp rates with resource selections up to the achievable potential. Class 2 resources that are not selected in any given year are not available for selection in future years. Achievable Class 2 DSM potential by state and year are summarized below.

Load Forecast
The medium load forecast will be used. The figure below shows the system coincident peak load forecast before accounting for any potential contribution from DSM or distributed generation resources.

Resource Specific
There are no other specific resource constraints that will be applied to this case.