

PacifiCorp 2011 IRP Portfolio Development Case Definitions - DRAFT 7/28/10
FOR DISCUSSION PURPOSES ONLY

Case #	Assumption Alternatives								
	Carbon Policy		Gas Price	Load Growth	Renewable Production Tax Credit Extension ^{11/}	Renewable Portfolio Standards	Demand-Side Management	Distributed Solar ^{18/}	Coal Plant Retirements
	Type	Cost							
	Cap & Trade ^{1/} System Hard Cap ^{2/} State Hard Cap ^{3/}	Low ^{4/} Medium ^{5/} High ^{6/} Medium-High ^{7/}	Low Medium High	Low Econ. Growth ^{8/} Medium Econ. Growth High Growth ^{9/} Low Indust. Growth ^{9/} High Indust. Growth ^{9/} High Peak Demand ^{10/}	No Extension Extension to 2015 Extension to 2030 Non-wind Extension	None State RPS ^{12/} Federal RPS ^{13/}	Medium Achievable ^{14/} High Achievable ^{14/} Class 3 Included ^{15/} Utah 50% Incentive ^{16/} Utah 75% Incentive ^{16/} Utah 100% Incentive ^{16/} Distribution Efficiency ^{17/}	No Incentives Current Incentives High Incentives	None Optimized ^{19/}
Core Cases									
1	None	None	Medium	Med. Econ. Growth	Extension to 2015	Federal RPS	Medium Achievable	Current Incentives	None
2	Cap & Trade	Low	Low	Low Econ. Growth	Extension to 2015	Federal RPS	Medium Achievable	Current Incentives	None
3	Cap & Trade	Medium	Low	Low Econ. Growth	Extension to 2015	Federal RPS	Medium Achievable	Current Incentives	None
4	Cap & Trade	High	Low	Low Econ. Growth	Extension to 2015	Federal RPS	Medium Achievable	Current Incentives	None
5	Cap & Trade	Low	Medium	Low Econ. Growth	Extension to 2015	Federal RPS	Medium Achievable	Current Incentives	None
6	Cap & Trade	Medium	Medium	Med. Econ. Growth	Extension to 2015	Federal RPS	Medium Achievable	Current Incentives	None
7	Cap & Trade	High	Medium	Low Econ. Growth	Extension to 2015	Federal RPS	Medium Achievable	Current Incentives	None
8	Cap & Trade	Low	High	Low Econ. Growth	Extension to 2015	Federal RPS	Medium Achievable	Current Incentives	None
9	Cap & Trade	Medium	High	Low Econ. Growth	Extension to 2015	Federal RPS	Medium Achievable	Current Incentives	None
10	Cap & Trade	High	High	Low Econ. Growth	Extension to 2015	Federal RPS	Medium Achievable	Current Incentives	None
11	Cap & Trade	Low	Low	Med. Econ. Growth	Extension to 2015	Federal RPS	Medium Achievable	Current Incentives	None
12	Cap & Trade	Medium	Low	Med. Econ. Growth	Extension to 2015	Federal RPS	Medium Achievable	Current Incentives	None
13	Cap & Trade	High	Low	Med. Econ. Growth	Extension to 2015	Federal RPS	Medium Achievable	Current Incentives	None
14	Cap & Trade	Low	Medium	Med. Econ. Growth	Extension to 2015	Federal RPS	Medium Achievable	Current Incentives	None
15	Cap & Trade	Medium	Medium	Med. Econ. Growth	Extension to 2015	Federal RPS	Medium Achievable	Current Incentives	None
16	Cap & Trade	High	Medium	Med. Econ. Growth	Extension to 2015	Federal RPS	Medium Achievable	Current Incentives	None
17	Cap & Trade	Low	High	Med. Econ. Growth	Extension to 2015	Federal RPS	Medium Achievable	Current Incentives	None
18	Cap & Trade	Medium	High	Med. Econ. Growth	Extension to 2015	Federal RPS	Medium Achievable	Current Incentives	None
19	Cap & Trade	High	High	Med. Econ. Growth	Extension to 2015	Federal RPS	Medium Achievable	Current Incentives	None
20	Cap & Trade	Low	Low	High Econ. Growth	Extension to 2015	Federal RPS	Medium Achievable	Current Incentives	None
21	Cap & Trade	Medium	Low	High Econ. Growth	Extension to 2015	Federal RPS	Medium Achievable	Current Incentives	None
22	Cap & Trade	High	Low	High Econ. Growth	Extension to 2015	Federal RPS	Medium Achievable	Current Incentives	None
23	Cap & Trade	Low	Medium	High Econ. Growth	Extension to 2015	Federal RPS	Medium Achievable	Current Incentives	None
24	Cap & Trade	Medium	Medium	High Econ. Growth	Extension to 2015	Federal RPS	Medium Achievable	Current Incentives	None
25	Cap & Trade	High	Medium	High Econ. Growth	Extension to 2015	Federal RPS	Medium Achievable	Current Incentives	None
26	Cap & Trade	Low	High	High Econ. Growth	Extension to 2015	Federal RPS	Medium Achievable	Current Incentives	None
27	Cap & Trade	Medium	High	High Econ. Growth	Extension to 2015	Federal RPS	Medium Achievable	Current Incentives	None
28	Cap & Trade	High	High	High Econ. Growth	Extension to 2015	Federal RPS	Medium Achievable	Current Incentives	None
Alternative Carbon Policy / Coal Plant Retirement Cases									
29	Cap & Trade	Medium	Medium	Med. Econ. Growth	Extension to 2015	Federal RPS	Medium Achievable	Current Incentives	Optimized
30	Cap & Trade	High	Medium	Med. Econ. Growth	Extension to 2015	Federal RPS	Medium Achievable	Current Incentives	Optimized
31	Hard Cap	Medium	Medium	Med. Econ. Growth	Extension to 2015	Federal RPS	High Achievable	Current Incentives	Optimized
32	State Hard Cap	Medium	Medium	Med. Econ. Growth	Extension to 2015	Federal RPS	Medium Achievable	Current Incentives	Optimized
33	Cap & Trade	Medium-High	Medium	Med. Econ. Growth	Extension to 2015	Federal RPS	Medium Achievable	Current Incentives	Optimized
Alternative Load Forecast Cases									
34	Cap & Trade	Medium	Medium	Low Industrial Growth	Extension to 2015	Federal RPS	Medium Achievable	Current Incentives	None
35	Cap & Trade	Medium	Medium	High Industrial Growth	Extension to 2015	Federal RPS	Medium Achievable	Current Incentives	None
36	Cap & Trade	Medium	Medium	High Peak Demand	Extension to 2015	Federal RPS	Medium Achievable	Current Incentives	None
Renewable Resource Policy Cases									
37	Cap & Trade	Medium	Medium	Med. Econ. Growth	No Extension	Federal RPS	Medium Achievable	Current Incentives	None
38	Cap & Trade	Medium	Medium	Med. Econ. Growth	Extension to 2030	Federal RPS	Medium Achievable	Current Incentives	None
39	Cap & Trade	Medium	Medium	Med. Econ. Growth	Non-wind Extension	Federal RPS	Medium Achievable	Current Incentives	None
40	Cap & Trade	Medium	Medium	Med. Econ. Growth	Extension to 2015	None	Medium Achievable	Current Incentives	None
41	Cap & Trade	Medium	Medium	Med. Econ. Growth	Extension to 2015	State RPS	Medium Achievable	Current Incentives	None
DSM Expanded Potential Cases									
42	Cap & Trade	Medium	Medium	Med. Econ. Growth	Extension to 2015	Federal RPS	High Achievable	Current Incentives	None
43	Cap & Trade	Medium	Medium	Med. Econ. Growth	Extension to 2015	Federal RPS	Class 3 Included	Current Incentives	None
44	Cap & Trade	Medium	Medium	Med. Econ. Growth	Extension to 2015	Federal RPS	Utah 50% Incentive	Current Incentives	None
45	Cap & Trade	Medium	Medium	Med. Econ. Growth	Extension to 2015	Federal RPS	Utah 75% Incentive	Current Incentives	None
46	Cap & Trade	Medium	Medium	Med. Econ. Growth	Extension to 2015	Federal RPS	Utah 100% Incentive	Current Incentives	None
47	Cap & Trade	Medium	Medium	Med. Econ. Growth	Extension to 2015	Federal RPS	Distribution Energy	Current Incentives	None
Distributed Solar Cases									
48	Cap & Trade	Medium	Medium	Med. Econ. Growth	Extension to 2015	Federal RPS	Medium Achievable	No Incentives	None
49	Cap & Trade	Medium	Medium	Med. Econ. Growth	Extension to 2015	Federal RPS	Medium Achievable	High Incentives	None
Business Plan Reference Case									
50									To Be Determined

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- 1/ Annual emissions targets: linear reduction to 80% below 2005 levels by 2050, starting in 2015. This approximates recent federal carbon legislative proposals. PacifiCorp will use an estimated annual allocated allowance schedule.
- 2/ Annual emissions capped at the emission targets outlined in footnote 1.
- 3/ West-side state emission targets as caps:
 - Oregon - 10% below 1990 levels by 2020, 75% below 1990 by 2050
 - Washington - 1990 levels by 2020, 25% below 1990 levels by 2035, 50% below 1990 levels by 2050
 - California - 2000 levels by 2010, 1990 levels by 2020, 80% below 1990 by 2050
- 4/ Starting at \$12/ton (2015\$) in 2015, with 5% annual escalation.
- 5/ Starting at \$19/ton (2015\$) in 2015, with 5% annual escalation.
- 6/ Starting at \$25/ton (2015\$) in 2015, with 7% annual escalation.
- 7/ Starting at \$19/ton (2009\$) in 2015, with 5% annual escalation through 2020; in 2020, escalating at 12% per year. Price reaches \$75/ton by 2030. Two portfolios will be developed. Portfolio 1 will represent a 20-year System Optimizer run. Portfolio 2 will represent the outcome of two System Optimizer runs; the first run will be a 10-year run, while the second run will be a 20-year run with the resources fixed per the initial 10-year run. These portfolios are intended to support analysis required in the Oregon Public Utility Commission's 2008 IRP acknowledgment order (Order No. LC 47), as well as the Oregon Commission's "Portfolio CO2 Risk Adaptability" IRP standard (Order No. 08-339).
- 8/ Low and High forecasts are two-percent decreases and increases, respectively, for economic drivers, relative to the medium forecast. Scenario details are yet to be determined.
- 9/ Low and High industrial load growth relative to the median forecast will be developed by the Load Forecast department in conjunction with Customer Account Managers. Scenario details are yet to be determined.
- 10/ A one-in-ten (10% probability of exceedance) high temperature load forecast.
- 11/ The "No Extension" assumption presumes that the federal production tax credit expires 12/31/12 for wind and 12/31/13 for other renewables. The PTC is currently \$21.5/MWh. The "Extension" assumption presumes that a PTC or equivalent incentive mechanism is in place for the duration of the simulation period (2011 - 2030). The "Non-wind Extension" assumption presumes that the PTC expires for wind in 2012 but is extended for all other renewables for the duration of the simulation period.
- 12/ This renewable portfolio standard assumption will gauge the portfolio cost of meeting current state requirements relative to the no-RPS alternative. States with applicable resource standards include California, Oregon, Washington, and Utah.
- 13/ Assumes a 3% energy requirement in 2015, escalating to 15% by 2025. This is in line with recently proposed federal legislation. State RPS constraints will also be enforced.
- 14/ Assumption alternatives constitute base and high achievable potential percentages informed by Cadmus Group and PacifiCorp DSM experience. Values to be determined.
- 15/ Class 3 DSM includes price-responsive load curtailment programs such as time-varying prices (Time of Use, Critical Peak pricing, etc.) and Demand Buyback programs.
- 16/ These three assumption alternatives are intended to meet Utah Public Service Commission DSM evaluation requirements. DSM will be modeled based on technical potential with the application of three utility incentive levels: 50% base, 75%, and 100%.
- 17/ PacifiCorp will evaluate whether a portfolio test that includes distribution energy efficiency (conservation voltage reduction) as a resource is practical and useful given available data. PacifiCorp is conducting a detailed study of distribution efficiency opportunities, but this study will not be completed in time to apply to the 2011 IRP.
- 18/ These three assumption alternatives are intended to meet Utah Public Service Commission distributed solar evaluation requirements. Distributed solar (rooftop PV and solar water heating) will be modeled with (1) no financial incentives, (2) current state/federal financial incentives, and (3) aggressive (high) financial incentives (to be defined).
- 19/ System Optimizer will select optimal coal plant retirement dates and replacement resources. Incremental environmental compliance, fueling, and decommissioning costs will be accounted for in coal plant costs. The simulation period will be extended to 2040 for the coal plant retirement cases.