Chapter 9
2009 PLAN CONCLUSIONS

Energy Supply Direction

NorthWestern has the ongoing responsibility to develop a supply strategy that mitigates the effects of Montana Power Company's past decisions to sell its rate based resources and move to a theoretically short-term "provider of last resort" model. NorthWestern, with the help of statutory changes and Commission decisions, has taken significant steps towards creating a supply portfolio that is stably priced and which provides long-term value for ratepayers and shareholders. Renewable resources and energy efficiency are critical components of the portfolio and play an expanding role over the planning period. NorthWestern is already a leader in including renewable generation in its portfolio. NorthWestern's has a very high percentage of wind as part of its supply portfolio. Currently, retail customers receive roughly 8% of their annual energy needs from Judith Gap; this 135MW wind facility accounts for approximately 25% of NorthWestern's on-system, load serving resources on an installed capacity basis. NorthWestern expects that over time the quantity of renewable generation will continue to increase and be a larger percentage of its supply portfolio. A strategy such as this – essentially adopting a cautious approach coupled with opportunistic additions to the supply portfolio and decreases in portfolio requirements from energy efficiency programs appears to be the best overall near-term path.

The conclusions of this Procurement Plan are drawn from the detailed and robust portfolio modeling and analyses set forth in preceding chapters, coupled with an understanding of the regional energy markets. Resource modeling has clearly demonstrated that under different futures, resource type, and timing, decisions can and should be different. When deciding between similar resources such as gas-combustion units, the choice to proceed must be clear and economically justified.

Low cost, price stability, and reliability have been defined as key objectives in this Plan. The significant uncertainties associated with potential carbon legislation and highly volatile energy markets for electricity and fuels must also be recognized and factored into both the Plan as a whole and the analysis underlying the Plan. By linking conclusions to the analysis, major utility supply decisions can be made in an informed and disciplined manner. While adhering to this process of informed analysis and decision-making, NorthWestern Energy is cognizant of the limitations of the analysis and has worked to strike the appropriate balance between analytical endeavors providing meaningful and actionable results and the need to make intelligent and timely resource decisions. NorthWestern has attempted to address the inherent limitations of quantitative analysis by soliciting the input of the ETAC on key model inputs and ensuring a broad review of the analytical results by NorthWestern staff. Feedback from the ETAC has been incorporated into the analytical process. The Plan analysis also utilizes scenario analysis to quantify the potential effects on the resource portfolio arising from environmental and market uncertainties.

Ultimately, the Plan's conclusions will guide NorthWestern's acquisition activities on behalf of its supply customers. The conclusions also raise policy issues NorthWestern believes will require the input and advice of policy makers such as the Commission and the Consumer Council along with the input of the ETAC.

Preferred Portfolios

The Plan's quantitative and qualitative analyses provide valuable insights about desirable portfolio characteristics. In reviewing the portfolio results, the 'No New Thermal Portfolio' (PF11) is generally the least cost, but contains more risk than other portfolios that only cost a small amount more than in the expected case. In addition, PF11 performs poorly in the High Market Scenario. The addition of natural-gas fired units provides risk

reduction from PF11 for a nominal increase in the mean portfolio cost. The shift to biomass projects in PF25 and PF26 increase cost from PF11, without significantly reducing risk. The coal unit options reduce risk the most, but do so at an increase in expected cost that outweighs the risk reduction. Coal-gas combinations, not surprisingly, fall in the middle ground between the coal results and natural gas.

In reviewing the results of the stochastic analysis for the 5 different scenarios, and carefully considering the inherent trade-offs, the top 3 portfolios for each of the 5 stochastic cases have been identified according to their position on the efficiency frontiers and placed into Table 43 below. When reviewing the efficiency frontiers, decisions can be made about the trade-offs between increased costs and minimizing risks. In general, the portfolios consistently in the portion of the curve nearest the origin best balance the various interests in risk trade-off vs. overall costs. In reviewing the efficiency frontiers for the five analyzed scenarios, some form of a natural gas plant is consistently in this position. This is particularly evident for the high market scenario, in which the natural gas units insulate the portfolio from very high electricity prices. It should be clearly understood that this conclusion is not necessarily supported except for the information from the High Market Scenario. For example, in the Basecase Scenario, the razor-thin $0.20/MWh reduction in the high cost tail does not justify a $1.83/MWh[1] increase in expected costs. When reviewing the High Market Scenario, however, the benefits of the natural gas addition to the portfolio are evident. The results, across the different scenarios are easier to understand by reviewing a risk profile chart with multiple scenarios represented. In Figure 35 below, the three preferred portfolios are included with PF11 (No New Thermal) and PF25 (Biomass) to provide reference.

One policy-level consideration, which has been incorporated quantitatively into the scenario weightings, but should warrant continued discussion, is to what degree should the portfolio composition protect the utility from bad outcomes in the High Market

[1] Comparison of the mean costs and 95% confidence level costs between Portfolio 27 (CCCT) and Portfolio 11 (basecase).

Scenario for benefits that are marginal or even losses if market and CO_2 emissions costs fall in line with the other forecasts, such as the Basecase Scenario?

In pairing down the general natural gas resource pool to specific portfolios, the three best are PF27, PF24, and PF21. Each of these portfolios employs a different configuration of gas combustion technology; combined cycle, aero derivative, and frame turbine. The results indicate that an optimal size range is in the 200 – 400MW range. The 400MW size is identified from PF28; the portfolio that performed best overall in the high market case. All of the identified portfolios are comprised of gas-fired technologies ranging in size from 100MW up to 400MW of capacity. In the Basecase and High Market Scenarios, combined cycle turbines are the preferred combustion technologies followed by 300MW of aero derivative gas units.

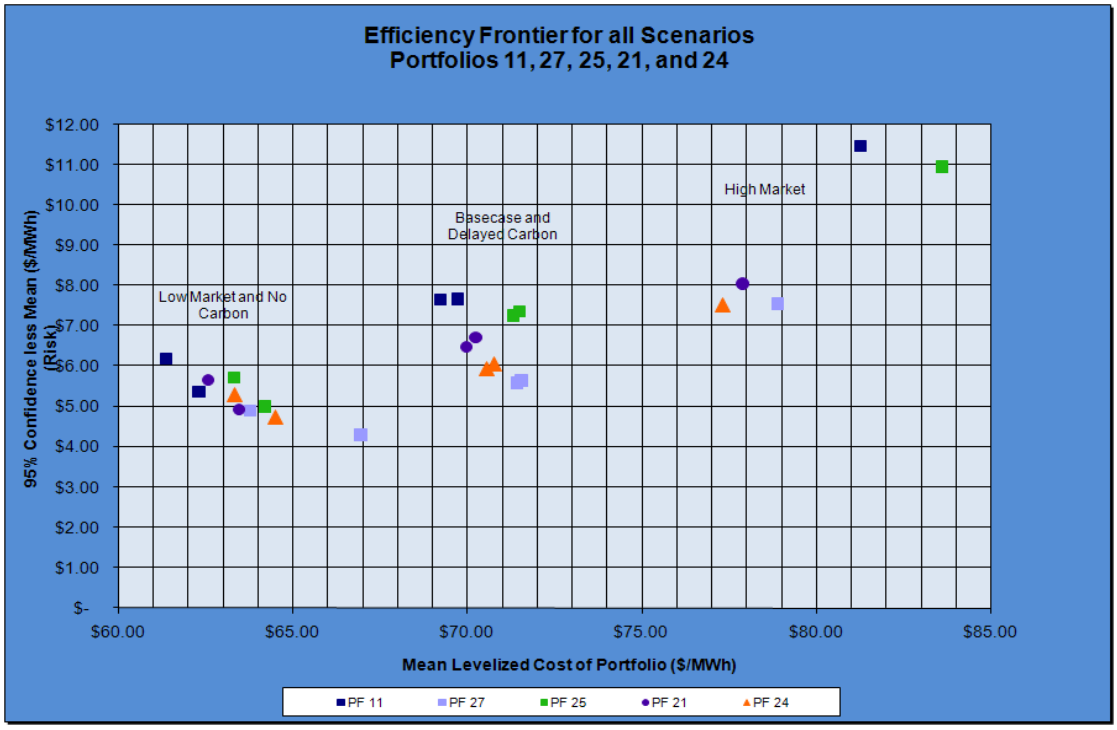
Table 43

Top Three Portfolios by Efficiency Frontier Position

	1	2	3
Base Case	PF27	PF24	PF21
High Market	PF28	PF24	PF44
Delay Carbon	PF27	PF24	PF21
No Carbon	PF27	PF23	PF24
Low Market	PF23	PF21	PF22
Preferred	PF27	PF24	PF21

PF27 - 200MW Combined cycle turbine
PF28 - 400MW Combined cycle turbines
PF24 - 300MW Aero derivative combustion turbines
PF21 - 300MW Frame combustion turbines
PF23 - 200MW Aero derivative combustion turbines
PF22 - 100MW Aero derivative combustion turbine
PF44 - 400MW Combined cycle turbines (staged)

Figure 34



Plan Conclusions

NorthWestern, unlike other utilities in the Northwest, must acquire sufficient resources to not only to meet its load growth but also to address the expiration of a significant quantity of short and medium term market based contracts. While the Colstrip Unit 4 acquisition currently provides 111MW of baseload power, increasing to 222MW in 2011, the 2009 Plan shows that as the 7 year PPL contract quantities decrease, NorthWestern needs to acquire a considerable quantity of primarily heavy load power to augment its existing resource portfolio. The Plan shows that this can best be accomplished through a robust energy efficiency program, market purchases, the acquisition of natural gas fired generation, and acquiring renewable resources.

Market purchases, including hourly, day-ahead, and term purchases, are fundamental elements of NorthWestern's current operating plan and strategic planning process. The use of term market purchases has been a key portfolio management tool in terms of timing of purchases to coincide with changing seasonal energy needs, contract expirations, and fit with other portfolio assets. Purchases are crafted, either through competitive solicitation or third party bilateral negotiation, to conform with the specific energy needs identified for the portfolio. Given current market pricing, NorthWestern believes that favorable purchasing opportunities for heavy load products beginning in 2012 and for 5 years or longer exist and should play a role in the ongoing development of the portfolio.

Over the next three years NorthWestern, based on the 2009 Plan's analyses, will evaluate opportunities to ratebase 200-300 MW of natural gas fired generation with generation delivery commencing post June 2014. This generation will primarily be used to meet future heavy load requirements. However, it is premature to narrow the procurement focus to a specific natural gas technology at this time, but any solicitation should be designed to differentiate between different options as part of the evaluation and decision-making process.

While the plan has identified gas-fired resource in portfolios that offer to provide a balance between cost and risk, it has not clearly and definitively delineated resources to the point that a specific gas-fired resource is preferred over all others.

One additional key consideration will be the value any gas unit can provide in meeting changing load requirements, operated in conjunction and coordination with other supply resources, and possibly supporting the integration of intermittent generation sources such as wind. This value between competing gas resources can be weighed in the context of resource negotiations.

Energy efficiency and renewable resources bring the benefit of renewable and emissions-free energy to a supply portfolio that is faced with a significant carbon risk. Both energy

efficiency and renewable generation provides a substantial percentage of NorthWestern's current portfolio, especially when compared to other utilities. NorthWestern is committed to acquiring, at a minimum, the quantity of renewable resources necessary to meet the Montana Renewable Portfolio Standards. NorthWestern anticipates that most of this will be from wind generation. In recent renewable competitive solicitations, wind has been by far the most common response. NorthWestern continues to believe a diversified renewable portfolio provides benefits and continues working with developers of alternative renewable generation sources – especially generation that provides a more predictable or schedulable output.

Integrating energy produced by wind is recognized as one of the most challenging of the supply portfolio operational, economic, and planning issues. NorthWestern is a regional leader in working to address the integration of wind into the system. The variable output of wind creates long or short portfolio positions in light load hours, involving substantial volumes of power, and that can occur on a moment's notice. This presents a significant operational challenge. Adding to the complexity of this situation is the fact that the Montana wind resource is quite good, and wind projects represent the single largest opportunity for new near-term renewable resource project construction. These issues are not unique to NorthWestern but given its relatively low load factor compared to many utilities (due to the lack of industrial supply customers) and current and forecast portfolio composition, they will require creative solutions, which NorthWestern is pursuing.

The effects that large incremental quantities of additional wind have on the Supply portfolio require additional study and action. NorthWestern has included 150MW of new wind generation into some of the resource portfolio modeling runs to test impacts of increased volumes of wind. By including this additional wind in some of the Supply portfolio modeling runs, NorthWestern has made a number of assumptions regarding the economic and operational practicality of doing so. This should not be construed as an endorsement, at this time, of adding 150MW of wind into the portfolio.

Energy Supply, and in some cases Transmission as well, are working hard to address key questions that need to be answered prior to the inclusion of large incremental additions of wind into the portfolio. Key questions include:

- ✓ The cost allocation and ultimately the pricing for wind regulation;
- ✓ The amount of regulation necessary to meet reliability criteria for future wind generation;
- ✓ NorthWestern's portfolio's low load factor, the large percentage of baseload power under long-term contract or ownership, and the impact on NorthWestern's light load requirements;
- ✓ The financial and physical effects on the portfolio of being unintentionally long, especially in light load hours, including recognizing transmission constraints; and
- ✓ Operational and value considerations of owned versus contracted wind generation.

NorthWestern proposes a cautious and incremental acquisition approach for new wind. Given the large percentage of wind in its supply portfolio and the quantity of light load resources already under contract to meet the supply portfolio's current needs, NorthWestern intends to add approximately 50 to 75 MW of additional wind while it gains necessary operational and economic knowledge arising from increasing the percentage of wind in the portfolio.

Resource acquisition processes must also consider how the future may or may not unfold. In considering resource choices, NorthWestern has no better vision of the future than other utilities. It can choose to defer or continue to analyze resource alternatives until the landscape for carbon or any major market transformations become clearer. NorthWestern will concentrate on developing optimization strategies for using its current fleet of resources acquiring market based contracts and renewable resources, and identifying gas generation technology and potential sites. In this planning cycle NorthWestern has identified an urgency to acquire energy efficiency, renewable resource generation, the

need to integrate intermittent wind energy reliably and efficiently, and the need to self-supply regulation service because of uncertainties associated with third party supply. Overlaying this, we add the charge to look for opportunities to add gas fired generation with generation beginning mid 2014 or later.