Reliability and Persistence of NWS versus Transmission Upgrades
Action Plan Template
Working Draft
Update
14 January 2004

Problem Statement

The level of certainty for non-wires solutions (NWS) used to defer transmission has to be much greater than when the NWS are used as energy resources, backup resources, or other. In particular, we need to determine with certainty that any group of NWS subsequently relied on to defer transmission will do so under 1 in 20 year weather conditions.

Current Situation

Many of the non-wires solutions we are considering have been used before to provide backup power to individual loads, to save energy, and even to relieve congestion on transmission lines. However, they have seldom been used to defer transmission[1]. Because NWS as we envision them have not been used in the past to defer transmission needs, there is a natural reluctance to rely on them. In addition, we do not have good data on how the NWS would respond in 1 in 20-year weather conditions.

Energy conservation measures, e.g., may be calculated to be $.02/kWh. If we are low by as much as 50%, the actual costs are higher, but the measure at $.03/kWh is clearly cost-effective, and little harm has been done. The energy is simply made up from other reserves. A similar condition may apply to generation. With transmission; however, the peak reduction or the amount of output at peak from all of the NWS deployed has to be maintain peak loads below the capacity of the transmission and distribution system. If they do not, load isn't served, with consequent damages. Thus, certainty of the performance of NWS is paramount to using them to defer transmission. If and when we gain this certainty, we will also have to assign a safety factor to the NWS. That is, do we employ NWS that will keep transmission capability at 100% of possible peak loads, 10% above, 20% above? What level of safety factor should we use?

Goal:

The goal is to determine the certainty with which we can rely on NWS to reduce peak load in a 1 in 20 winter.

Actions:

Separate NWS into groups with certain know characteristics, as follows:

- Energy efficiency measures,

[1] An exception to this statement is in the Puget Sound Voltage Collapse study in the early 1990s. There conservation was used to help defer a major upgrade to transmission across the Cascades.

- Distributed generation, including SCCT, e.g.,
- Contractual demand response, and
- Voluntary demand response.

For energy efficiency; possible steps:

- Use consultant services to scan information from RTF and other US information resources to create lists of likely applicable peak-oriented energy efficiency measures for residential and commercial sectors and to review the savings of measures to analyze and determine how they would react in 1 in 20 winter and summer weather conditions.
- Run pilot programs to determine effects from energy efficient measures under harsh weather conditions. Perhaps one way to do this is to blitz a set of loads hooked to a single substation and to measure the effects of the cumulative NWS at the substation. Referred to Pilot Work Group.
- Run real deferral project for two years to learn how we are doing. If we are not getting the results we want, commence construction of wires. Referred to Pilot Work Group.

Who: Ken Keating and Terry Oliver
Due Date: Set up by end of November
Dollars: Consultant fees may range from $70,000 to $90,000. Pilot Evaluation costs will be determined during pilot evaluation design.
Partners: Retail utilities, interest groups, state agencies, PUCs, Energy Trust of Oregon, NEEA, e.g.
Current Status: Some of this work has been included in the Olympic Detailed Study scope. Another scope of work has been drafted and is internal review to accomplish additional work in this area. Olympic pilots are in early implementation stages. Additional pilot principles, knowledge needs, and selection criteria have been identified.

For distributed generation gather a group of QF representatives to discuss this problem with them

- Focus on fuel availability in a 1 in 20 year weather condition.
- Focus on reliability of generators in a 1 in 20 year weather condition,
- How many dg units are needed to bring certainty that x% will be operating on peak?
- Run pilot projects similar to the energy efficiency pilots above?

Who: Mike Hoffman, Tom Foley, Bob Kahn
Due Date: June 2004
Dollars: none (internal staffing costs only)

Partners: Retail utilities, interest groups, state agencies, IPPS, and QFs.
Current Status: No additional activity underway yet.

For contractual demand response review past history of end-users under contract (perhaps DSIs, although they may be a special case).

- How often are contracts defaulted on?
- Determine how difficult it would be for prospective loads to actually defer loads in a 1 in 20 year weather condition.

Who: Brad Miller, Ken Canon
Due Date: October 2004
Dollars: none (internal staffing costs only)
Partners: Retail utilities, ICNU, Others?
Current Status: No additional work underway yet.

For voluntary demand response:

- Review past history of end-users under voluntary demand response programs.
- Determine how difficult it would be for prospective loads to actually defer loads in a 1 in 20 year weather condition.

Who: Brad Miller, Ken Canon
Due Date: October 2004
Dollars: none (internal staffing costs only)
Partners: Retail utilities, ICNU, others
Current Status: No additional work underway yet.