PROPOSED ARLINGTON AREA WIND FARMS
FINAL SYSTEM IMPACT STUDY
EXECUTIVE SUMMARY

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Transmission Business Line

BPA has received several transmission requests through the OATT process from proposed new wind farms in the Arlington area, west of the McNary substation. This report is Bonneville Power Administration Transmission's (BPA TBL) response addressing the System Impact Study (SIS) requirement for these requests. The proposed wind farms with transmission requests for long-term firm transmission service (including but not limited to Columbia Energy Partners (CEP) Arlington wind farm, PPM Energy (PPM) Arlington wind farm (now referred to as Leaning Juniper), and Lifeline Renewable near Dalreed) are being proposed to interconnect to the McNary-Santiam 230 kV line No. 2 and would add generation to the West of McNary (WOM) flowgate.

Based on existing obligations, and other requests ahead of these in the long-term firm transmission service queue, it is forecast that system expansion is required to provide long-term firm available transfer capability (ATC) for transmission service requests with POR on the 230 kV system between McNary and Santiam substations. The proposed McNary-John Day 500 kV line addresses the lack of firm ATC across the main grid. This SIS report addresses any additional secondary-grid issues in the area, system upgrades, and additions that will be needed in order for wind generators in the area to receive long-term firm transmission service based on their location. This report also discusses operating issues associated with non-firm transmission service for the wind farms coming online before the McNary-John Day 500 kV line is put into service.

Three main conclusions are:

- Without the McNary-John Day 500 kV line, 95 MW of generation can be connected to the McNary-Santiam 230 kV line No. 2 without need for a line upgrade. The generation, however, will have a negative impact on the operational limit of the West of McNary (WOM) flowgate. Adding the generation to the West of McNary RAS scheme will mitigate the problem. If the generation is added to the West of McNary RAS scheme, then 150 MW of generation can be connected.

- A total of 410 MW of generation can be connected to the McNary-Santiam 230 kV line No. 2 after re-sagging the McNary-Santiam 230 kV line to 80 degrees MOT, and adding a local tripping scheme to trip the generation upon loss of either end of the McNary-Santiam line. The tripping scheme is required to prevent voltage instability and to prevent damage to the wind turbines upon the reclosing of the line.

- Due to limits on the amount of generation that can be tripped as RAS for any single contingency, the system has capacity for no more than 450 MW of wind generation to

operate on the 230 kV system between McNary and Santiam when the WOM flogate is at it's limit.

The conclusions assume the following infrastructure additions, including (a) Bell-Coulee, (b) the addition of a 500 kV line between McNary and John Day (studies were conducted both pre- and post- this addition), (c) addition of a 200 MVAR capacitor bank at the McNary 500 kV bus, (d) addition of the Schultz-Wautoma 500 kV line, (e) addition of a new substation and tap of the McNary-Santiam 230 kV line No. 2 for interconnection of the wind farms.

Therefore, the system expansion that is required to provide firm transmission service for wind generation on the 230 kV system between McNary and Santiam are; (1) upgrade the McNary-Santiam 230 kV line no. 2 which would accommodate up to 410 MW of wind generation on that line, (2) Remedial Action Schemes, and (3) completion of the McNary-John Day 500 kV line project. At this time the estimated completion date for the planned McNary-John Day 500 kV line is December 31, 2007. Information regarding implementation of the McNary-John Day project is available on the BPA TBL web site at http://www.transmission.bpa.gov/PlanProj/Transmission_Projects/. For more than 450 MW of wind generation on the 230 kV system between McNary and Santiam to receive firm transmission service, an alternative plan of service will be required.

BPA is required to tender a System Facilities Study (SFS) Agreement to the customer for the next step in the transmission open access process. The SFS would provide a detailed study and plan of service for additions and/or modifications to provide the requested transmission service. The cost, schedule, and implementation for facilities (1) and (2) have been addressed in the Interconnection Facilities Studies for the specific generators and will be implemented as part of the Large Generator Interconnection Agreement that will be tendered to the customer. The cost, schedule, and implementation of facility (3) is already being addressed in the McNary-John Day open season process. Therefore, no SFS is required at this time. If the planned facilities discussed above do not move forward an SFS would be required at that time to reevaluate the requirements.

The scope of the needed system expansion conclusions is based on certain assumptions. The results of the study could be significantly different if base assumptions are changed (e.g. planned infrastructure improvements are not implemented). The full SIS report and associated supporting data are available upon request from BPA TBL subject to a non-disclosure agreement.