

TABLE OF CONTENTS

	<u>Page</u>
FACT SHEET	<i>i</i>
CHAPTER 1: SUMMARY	
1.1 Introduction	1-1
1.2 Purpose and Need for Project	1-1
1.3 Decisions to be Made.....	1-3
1.4 Description of Alternatives.....	1-3
1.5 Summary of Public Involvement, Consultation, and Coordination	1-9
1.6 Document Organization.....	1-10
1.7 Issues to be Resolved.....	1-10
1.8 Summary of Impacts and Mitigation Measures	1-12
1.9 Cumulative Impacts	1-13
1.10 Significant Unavoidable Adverse Impacts.....	1-20
CHAPTER 2: PROPOSED ACTION AND ALTERNATIVES	
2.1 Introduction	2-1
2.2 Description of Proposed Action	2-3
2.3 Construction Costs	2-32
2.4 Mitigation Measures Inherent in the Project Design	2-32
2.5 Description of No Action Alternative	2-32
2.6 Alternatives Considered but Rejected	2-34
2.7 Consideration of Offsite Alternatives.....	2-40
2.8 Benefits or Disadvantages of Reserving Project Approval for a Later Date	2-54
CHAPTER 3: AFFECTED ENVIRONMENT, SIGNIFICANT IMPACTS, AND MITIGATION MEASURES	
3.1 Earth Resources.....	3.1-1
3.2 Vegetation, Wetlands, Wildlife and Habitat, Fisheries, and Threatened and Endangered Species.....	3.2-1
3.3 Water Resources.....	3.3-1
3.4 Health and Safety	3.4-1
3.5 Energy and Natural Resources	3.5-1
3.6 Land Use and Recreation.....	3.6-1
3.7 Socioeconomics.....	3.7-1
3.8 Cultural Resources	3.8-1
3.9 Visual Resources.....	3.9-1
3.10 Transportation	3.10-1
3.11 Air Quality.....	3.11-1
3.12 Noise.....	3.12-1
3.13 Public Services and Utilities	3.13-1
3.14 Cumulative Impacts	3.14-1
CHAPTER 4: REFERENCES.....	4-1
CHAPTER 5: ACRONYMS AND ABBREVIATIONS.....	5-1

TABLE OF CONTENTS (cont.)

	<u>Page</u>
CHAPTER 6: DISTRIBUTION LIST.....	6-1
CHAPTER 7: LIST OF PREPARERS.....	7-1

List of Tables

Table 1-1:	Projected Pacific Northwest Electricity Demand, 2000-2025.....	1-2
Table 1-2:	Pertinent Regulations, Statutes, and Ordinances	1-7
Table 1-3:	Summary of Impacts and Mitigation.....	1-22
Table 2-1:	Permanent Disturbance Footprint for Range of Proposed Turbines	2-8
Table 2-2:	Temporary Disturbance Footprint for Range of Proposed Turbines.....	2-8
Table 2-3:	Property Ownership Changes in KWPP Area (as of September 2003)	2-9
Table 2-4:	Wind Turbine Features, Kittitas Valley Wind Power Project	2-11
Table 2-5:	Estimated Type, Number, and Duration of Project Construction Equipment	2-21
Table 2-6:	Typical Spread-Footing Type Foundation Dimensions.....	2-24
Table 2-7:	Construction Labor Force Mix (Approximate Number of Personnel).....	2-29
Table 2-8:	Construction Labor Resource Loading (Approximate Number of Personnel)	2-29
Table 2-9:	Potential Annual Requirements of Energy Generation for a 60 Average Megawatt Natural-Gas-Fired Combined-Cycle Combustion Turbine	2-33
Table 2-10:	Comparison of Various Wind Turbines	2-34
Table 3.1-1:	Summary of Potential Earth Resource Requirements and Potential Impacts	3.1-7
Table 3.1-2:	Estimated Cut and Fill Requirements for Proposed Turbines (Cubic Yards).....	3.1-8
Table 3.1-3:	Estimated Gravel/Fill Import Quantities for Proposed Turbines (Cubic Yards)	3.1-9
Table 3.1-4:	Estimated Quantities for Rock Export or Onsite Crushing for Proposed Turbines (Cubic Yards)	3.1-10
Table 3.2-1:	Summary of Habitats Associated with the Proposed Turbine Strings of the Project	3.2-6
Table 3.2-2:	Characteristics of Potential Stream Channel Crossings within the Project Area.....	3.2-20
Table 3.2-3:	Federal and State Protected Wildlife Species Identified by Federal and State Agencies as Potentially Occurring near or within the Project Area.....	3.2-24
Table 3.2-4:	Potential Occurrence of Federal and State Protected Wildlife and Fish Species within the Project Area	3.2-25
Table 3.2-5:	Summary of Potential Construction Impacts: Vegetation, Wetlands, and Wildlife.....	3.2-28
Table 3.2-6:	Temporary Vegetation Community Impacts.....	3.2-30
Table 3.2-7:	Permanent Vegetation Community Impacts	3.2-30
Table 3.2-8:	Potential Stream Channel Crossings within the Project Area	3.2-35
Table 3.2-9:	Impacts at Potential Stream Crossings (square feet).....	3.2-35
Table 3.2-10:	Summary of Potential Operations and Maintenance and Decommissioning Impacts: Vegetation, Wetlands, and Wildlife	3.2-39
Table 3.2-11:	Summary of Projected Annual Mortality of Raptor, Passerine, and Bat Species Associated with Turbine and Meteorological Tower Collisions.....	3.2-43

TABLE OF CONTENTS (cont.)

Table 3.2-12:	Summary of Fatalities at Operating Wind Power Projects in the United States of Federal and State Protected Bird Species Observed during 2002 Project Area Wildlife Surveys.....	3.2-50
Table 3.2-13:	Proposed Mitigation Ratios and Replacement Acres of Habitat under the Middle Scenario (Acres).....	3.2-57
Table 3.3-1:	Summary of Potential Water Resources Use and Potential Impacts.....	3.3-4
Table 3.4-1:	Summary of Potential Health and Safety Risks	3.4-2
Table 3.4-2:	Kittitas Valley Wind Power Project Wind Turbine Shadow-Flicker Analysis.....	3.4-11
Table 3.4-3:	Fire and Explosion Risk Mitigation Plan	3.4-17
Table 3.5-1:	Projected Pacific Northwest Electricity Demand, 2000-2025.....	3.5-2
Table 3.5-2:	Proposed Generation Projects in Washington.....	3.5-4
Table 3.5-3:	Washington/Oregon Generation Facilities Constructed in 2002.....	3.5-5
Table 3.5-4:	Washington Generation Facilities Currently Under Construction	3.5-5
Table 3.5-5:	Summary of Potential Energy and Natural Resources Requirements.....	3.5-9
Table 3.6-1:	Parks, Recreational Facilities, and Activities within 25 Miles of the Project.....	3.6-5
Table 3.6-2:	Summary of Potential Land Use and Recreation Impacts	3.6-9
Table 3.6-3:	Project Facilities by Zoning District.....	3.6-19
Table 3.7-1:	Kittitas County and Washington State Population.....	3.7-2
Table 3.7-2:	Kittitas County Demographic Breakdown of Population by Race.....	3.7-2
Table 3.7-3:	Housing Units in Kittitas County and Washington State	3.7-2
Table 3.7-4:	Kittitas County and Washington State Employment by Industry, 2000	3.7-3
Table 3.7-5:	Unemployment Rate Trends in Kittitas County and Washington State, 1996-2001.....	3.7-4
Table 3.7-6:	Kittitas County Per Capita Income (1997-2000)	3.7-4
Table 3.7-7:	Kittitas County and Washington State Taxable Retail Sales, 1998-2001 (\$000s)	3.7-5
Table 3.7-8:	Kittitas County General Fund, Total Resources (2001)	3.7-5
Table 3.7-9:	Summary of Potential Socioeconomic Impacts	3.7-6
Table 3.7-10:	Summary of Direct, Indirect, and Induced Employment and Income Impacts during Project Construction (2002\$) for the Middle Scenario	3.7-14
Table 3.7-11:	Operations and Maintenance Labor Force (Number of Personnel)	3.7-14
Table 3.7-12:	Annual Employment and Income Impacts in Kittitas County during Operations (2002\$) for the Middle Scenario	3.7-19
Table 3.7-13:	Allocation of Added Annual Property Tax Revenue in Kittitas County for the Middle Scenario	3.7-20
Table 3.7-14:	Additional Kittitas County Government Tax Revenues for the Middle Scenario	3.7-21
Table 3.8-1:	Summary of Potential Cultural Resources Impacts	3.8-6
Table 3.9-1:	Landscape Scenic Quality Scale.....	3.9-4
Table 3.10-1:	Average Daily Traffic Volumes and Estimated Percentage of Trucks	3.10-4
Table 3.10-2:	2001 Conditions of Affected Roadways	3.10-5
Table 3.10-3:	Accident Rates and Numbers, 1996 and 2001	3.10-6
Table 3.10-4:	Summary of Potential Transportation Impacts	3.10-08
Table 3.10-5:	Construction Trip Generation.....	3.10-10
Table 3.10-6:	Total PM Peak Hour and LOS Construction Impacts (Lower End Scenario)	3.10-11
Table 3.10-7:	Existing and Future Daily Peak-Hour Traffic Volumes and LOS with and without Project (Upper End Scenario)	3.10-14
Table 3.10-8:	Existing, Future Daily, and Peak-Hour Traffic Volumes and LOS without Project	3.10-18

TABLE OF CONTENTS (cont.)

Table 3.11-1:	Summary of Potential Air Quality Impacts.....	3.11-4
Table 3.11-2:	Typical CO ₂ Emission Factors for Electrical Generating Stations.....	3.11-9
Table 3.12-1:	State of Washington Noise Regulations.....	3.12-2
Table 3.12-2:	Sound Pressure Levels of Representative Sounds and Noises	3.12-3
Table 3.12-3:	Summary of Potential Noise Impacts	3.12-6
Table 3.12-4:	Noise Levels from Common Construction Equipment.....	3.12-7
Table 3.12-5:	Predicted Noise Levels in KWWPP Area.....	3.12-9
Table 3.13-1:	School District Student Population in the KWWPP Area, 2002-2003 School Year	3.13-5
Table 3.13-2:	Summary of Potential Construction Impacts: Public Services.....	3.13-8
Table 3.13-3:	Summary of Potential Operations and Maintenance, and Decommissioning Impacts: Public Services	3.12-12
Table 3.14-1:	Summary of Proposed Wind Power Project Features in Kittitas County (Assumes 1.5 MW Turbines).....	3.14-2
Table 3.14-2:	Cumulative Income Impacts Generated by Construction Employment in Kittitas County (2002\$) for Kittitas Valley and Desert Claim Projects.....	3.14-15
Table 3.14-3:	Annual Cumulative Income Impacts in Kittitas County during Operations (2002\$) for Kittitas Valley and Desert Claim Projects.....	3.14-16
Table 3.14-4:	Cumulative Potential Property Tax Revenues in Kittitas County with Wind Projects (First Operational Year).....	3.14-17
Table 3.14-5:	Existing and Future Daily and Peak-Hour Traffic Volumes and LOS without Project	3.14-29
Table 3.14-6:	Total PM Peak Hour and LOS for Combined Construction Impacts on the Roadways from the KWWPP and Wild Horse Project	3.14-30

List of Figures

Figure 1-1:	Vicinity Map	1-5
Figure 1-2:	Project Site Map.....	1-6
Figure 2-1:	Project Site Layout, Middle Scenario.....	2-5
Figure 2-2:	Typical Wind Turbine Dimensions	2-6
Figure 2-3:	Typical Modern Three-Bladed Upwind Turbine Generator.....	2-12
Figure 2-4:	Typical Nacelle	2-13
Figure 2-5:	Electrical and Communications System.....	2-16
Figure 2-6:	Comparison of Various Wind Turbine Technologies.....	2-36
Figure 2-7:	Alternative A Site Layout	2-44
Figure 2-8:	Areas Investigated for Wind Energy Development	2-37
Figure 2-9:	Alternative 1 Wild Horse	2-51
Figure 2-10:	Alternative 2 Springwood Ranch	2-52
Figure 3.1-1:	Geotechnical Test Pit and Fault Locations.....	3.1-2
Figure 3.1-2:	Soils	3.1-5
Figure 3.2-1:	Vegetation Types	3.2-5
Figure 3.2-2:	Stream Survey Locations	3.2-11
Figure 3.2-3:	Approximate Perches and Flight Paths of Bald Eagles	3.2-14
Figure 3.2-4:	Approximate Raptor Nest Locations	3.2-15
Figure 3.2-5:	Mule Deer and Elk Winter Ranges.....	3.2-17
Figure 3.4-1:	1996-2000 Lighting Flash Density	3.4-4

TABLE OF CONTENTS (cont.)

Figure 3.4-2:	Typical Electromagnetic Levels for Transmission Lines	3.4-14
Figure 3.6-1:	Existing Land Use.....	3.6-3
Figure 3.6-2:	Existing Zoning	3.6-4
Figure 3.6-3:	Recreational Areas	3.6-8
Figure 3.7-1:	Construction Employment Schedule	3.7-10
Figure 3.9-1:	Photograph Locations Outside Project Area.....	3.9-7
Figure 3.9-2:	Photograph Locations Within Project Area	3.9-8
Figure 3.9-3:	Viewpoint 1: Existing Conditions	3.9-9
Figure 3.9-4:	Viewpoint 2: Existing Conditions	3.9-10
Figure 3.9-5:	Viewpoint 3: Existing Conditions	3.9-11
Figure 3.9-6:	Viewpoint 4: Existing Conditions	3.9-14
Figure 3.9-7:	Viewpoint 5: Existing Conditions	3.9-15
Figure 3.9-8:	Viewpoint 6: Existing Conditions	3.9-18
Figure 3.9-9:	Viewpoint 7: Existing Conditions	3.9-19
Figure 3.9-10:	Viewpoint 8: Existing Conditions	3.9-20
Figure 3.9-11:	Viewpoint 9: Existing Conditions	3.9-23
Figure 3.9-12:	Viewpoint 10: Existing Conditions	3.9-24
Figure 3.9-13:	Viewpoint 11: Existing Conditions	3.9-25
Figure 3.9-14:	Viewpoint 1: Simulated View Lower End Scenario.....	3.9-30
Figure 3.9-15:	Viewpoint 1: Simulated View Middle Scenario	3.9-31
Figure 3.9-16:	Viewpoint 1: Simulated View Upper End Scenario	3.9-32
Figure 3.9-17:	Viewpoint 2: Simulated View Gray Turbines.....	3.9-33
Figure 3.9-18:	Viewpoint 2: Simulated View Brown Turbines.....	3.9-34
Figure 3.9-19:	Viewpoint 3: Simulated View	3.9-35
Figure 3.9-20:	Viewpoint 4: Simulated View	3.9-36
Figure 3.9-21:	Viewpoint 5: Simulated View	3.9-37
Figure 3.9-22:	Viewpoint 6: Simulated View	3.9-38
Figure 3.9-23:	Viewpoint 7: Simulated View	3.9-41
Figure 3.9-24:	Viewpoint 8: Simulated View	3.9-42
Figure 3.9-25:	Viewpoint 9: Simulated View Gray Turbines.....	3.9-43
Figure 3.9-26:	Viewpoint 9: Simulated View Brown Turbines.....	3.9-44
Figure 3.9-27:	Viewpoint 10: Simulated View	3.9-45
Figure 3.9-28:	Viewpoint 11: Simulated View	3.9-46
Figure 3.10-1:	Existing Average Daily Traffic Volumes for 2001.....	3.10-3
Figure 3.11-1:	Kittitas Valley Area Wind Rose	3.11-3
Figure 3.12-1:	Noise Monitoring Locations	3.12-5
Figure 3.13-1:	Fire Districts.....	3.13-3
Figure 3.14-1:	Cumulative Study Area for Kittitas Valley, Desert Claim, and Wild Horse Wind Power Projects.....	3.14-3
Figure 3.14-2:	Photograph Locations for Cumulative Analysis	3.14-20
Figure 3.14-3:	Viewpoint 1: Existing Conditions	3.14-21
Figure 3.14-4:	Viewpoint 1: Simulated Conditions Kittitas Valley Wind Power Project	3.14-22
Figure 3.14-5:	Viewpoint 1: Simulated Conditions Desert Claim Wind Power Project	3.14-23
Figure 3.14-6:	Viewpoint 1: Simulated Conditions Cumulative Scenario.....	3.14-24
Figure 3.14-7:	Viewpoint 2: Existing Conditions	3.14-25
Figure 3.14-8:	Viewpoint 2: Simulated Conditions Cumulative Scenario.....	3.14-26

TABLE OF CONTENTS (cont.)

Appendices

- Appendix A: Vegetation, Wetlands, Wildlife, and Threatened and Endangered Species
- Appendix B: Health and Safety
- Appendix C: Transportation
- Appendix D: Noise