

NORTHWESTERN ENERGY

2022 MONTANA ELECTRICITY SUPPLY

RESOURCE

PROCUREMENT PLAN

Draft Table of Contents

<u>SUBJECT</u>	<u>PAGE</u>
Chapter 1. EXECUTIVE SUMMARY	1-1
Planning for the Future	1-3
1. TBD.....	1-3
Chapter 2. INTRODUCTION.....	2-1
Chapter 3. PLANNING PROCESS AND HISTORY.....	3-1
NorthWestern Resource Planning Process and History	3-1
1. Montana Planning Requirements.....	3-1
2. ETAC’s Role In The Planning Process	3-2
3. NorthWestern Resource Planning and Acquisition Process.....	3-2
a. NorthWestern’s 2019 Plan and 2020 Supplement	3-3
b. Action Plan	3-3
a. Result of 2020 RFP.....	3-3
4. NorthWestern Resource Planning – Regional Context	3-4
5. ETAC’s Role in the Planning Process	3-5
6. Resource Acquisitions.....	3-6
7. RFP Process.....	3-7
8. Qualifying Facility (QF) Process	3-8
9. Opportunity Resource Acquisition Process	3-9

Chapter 4. REGIONAL OUTLOOK.....4-1

TBD4-1

1. Load-Resource Balance in the Region..... 4-1

2. Impacts of Changing Regional Power Supply on market Price and Reliability 4-2

3. Market Development 4-3

 a. Western Energy Imbalance Market (WEIM) 4-3

 b. SPP and WEIS 4-4

4. Western Resource Adequacy Program 4-5

Chapter 5. ENERGY AND ENVIRONMENTAL POLICY5-1

TBD5-1

1. Greenhouse Gas Emissions..... 5-1

 a. Federal Climate Policy..... 5-2

 b. Regional Climate Goals 5-3

 c. NorthWestern’s Carbon Emissions Goals 5-5

 d. Carbon Pricing 5-6

 e. NorthWestern’s Green Tariff..... 5-7

Chapter 6. LOAD AND RESOURCE BALANCE.....6-1

TBD6-1

1. NorthWestern’s Loads..... 6-1

2. Patterns in Our Customer’s Demands for Electricity 6-2

 a. Building Electrification and Electric Vehicles..... 6-3

 b. Peak Load Forecast 6-4

 c. Energy Forecast (volume)..... 6-5

3. NorthWestern’s Resources 6-6

 a. Energy Efficiency 6-7

 b. Demand Response..... 6-8

 c. Thermal Plants 6-9

 d. Hydro Resources 6-10

 e. Renewable Resources 6-11

 f. Demand Side Management 6-12

g. Power-Purchase Agreements	6-13
h. PURPA Qualifying Facilities (listing of resources).....	6-14
4. Energy and Capacity Position	6-15
a. Capacity Accreditation	6-16
b. Planning and Reserve Margin.....	6-17
c. Capacity Need Assessment.....	6-18
d. Energy Position.....	6-19
Chapter 7. TBD	7-1
Chapter 8. TRANSMISSION SYSTEM.....	8-1
NorthWestern's Electric Transmission System.....	8-1
1. Overview.....	8-1
2. Key Concepts and Definitions.....	8-1
3. Impact of Colstrip Closure and the 500kV System	8-2
4. Import and Export Capability	8-3
5. Cost of New Transmission Capacity	8-4
NorthWestern's Natural Gas Transmission System	8-5
Transmission Systems Summary.....	8-6
Chapter 9. RESOURCE PLANNING ANALYSIS	9-1
TBD	9-1
1. Candidate Resources	9-1
2. Candidate Resource Cost Assumptions	9-1
a. NREL ATB Cost Estimates.....	9-2
b. Consultant Provided Cost Estimates.....	9-3
c. Our Base Case.....	9-4
3. Commodity Price Forecasts	9-5
a. Natural Gas Prices	9-6
b. Coal Prices.....	9-7
c. Power Prices.....	9-8
d. Carbon Prices.....	9-9
4. Analytical Research	9-10
5. Capacity Expansion Plans Tested	9-11
6. Sensitivity Analysis	9-12
7. Results.....	9-13

a. Cost and Risk	9-14
b. Environmental	9-15
c. Reliability	9-16
Chapter 10. EMERGING TECHNOLOGIES	10-1
TBD	10-1
1. Overview	10-1
2. Building the Foundation for the Future	10-2
a. Smart Metering Infrastructure	10-3
b. Demand Response	10-4
c. Distributed Energy Resources (DERs)	10-5
d. Review of NorthWestern’s Technology Projects	10-6
3. Super Capacitor Energy Storage	10-7
Chapter 11. ACTION PLAN	11-1
Appendix A. RESOURCE PLANNING,	
MONTANA STATUTES AND RULES	A-1
Montana Code Annotated, Title 69, Chapter 8, Part 4.....	A-1
Administrative Rules of Montana, 38.5.82.....	A-1
Appendix B. FREQUENTLY ASKED QUESTIONS.....	B-1
Appendix C. ETAC Meetings List	C-1
Appendix D. GLOSSARY	D-1
Appendix E. ABBREVIATIONS.....	E-1