2013 MAPP Regional Plan

Integrated System (IS)

Mid-Continent Area Power Pool

MAPP Regional Planning Group Meeting

October 23rd, 2013

Western AREA POWER ADMINISTRATION

Integrated System (IS)

- The Integrated System (IS) consists of the following transmission owners that have facilities predominately located in North and South Dakota (with a few facilities located in western Minnesota, Iowa and Nebraska).
    - Western Area Power Administration (WAPA)
    - Basin Electric Power Cooperative (BEPC)
    - Heartland Consumers Power District (HCPD)
    - Northwestern Energy (NWE)
    - Army Corps of Engineers (COE)
    - MN Municipal Power Agency (MMPA)
    - Missouri River Energy Services (MRES)

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Generation Facilities

- BEPC is proceeding with the addition of six peaking plants in the western North Dakota region to meet increased load demand. Each with a maximum output of 50 MW (300 MW Total).
    - Lonesome Creek (3x50 MW): POI at Hay Butte 115 kV substation near Watford City 115 kV
    - Pioneer (3x50 MW): POI at Stateline 115 kV substation near Williston 115 kV
    - By the end of October 2013 the first 50 MW at each location will be online.
    - Pioneer Unit 2-3: In-Service January 2014
    - Lonesome Creek 2-3: In-Service January 2015

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Facility Additions and Improvements: Eastern MT and Western ND

- Area loads in Western North Dakota are growing rapidly and load forecasts are constantly being updated. There are several facility additions and improvements planned to meet the load serving needs of the IS in this area.

Planned and Proposed Capacitor Additions

Company	Location	Total Size	Size	In-Service Date
Committed (Planned) Capacitor Additions				
BEPC	Dunning 115 kV	20 MVAR	2 x 10 MVAR	11/2013
BEPC	Ambrose 115 kV	9.6 MVAR	1 x 9.6 MVAR	11/2013
BEPC	Logan 115 kV	30 MVAR	2 x 15 MVAR	10/2014
Proposed Capacitor Additions				
BEPC	Larson 115 kV	10 MVAR		2023

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Facility Additions and Improvements: Eastern MT and Western ND cont…

Transmission Line Projects and Associated Substation Upgrades

Company	Location	Approximate Distance	In-Service Date
Committed (Planned) Line Additions			
BEPC	Blaisdell-Berthold 115 kV	15 miles	2013
BEPC	Antelope Valley-Charlie Creek 345 kV	66 miles	2016
BEPC	Charlie Creek-Indian Hills-Judson 345 kV	71 miles	2016
BEPC	Tande 345/230 kV Substation	----	2017
BEPC	Judson 345/230 kV Substation	----	2016
BEPC	Judson-Tande 345 kV	58 miles	2017
BEPC	Judson-Williston 230 kV	2 miles	2016
BEPC	Tande-Neset 230 kV	2 miles	2017
Proposed Line Additions			
BEPC	Gumbo Creek Substation 345/115 kV	----	2017
BEPC	Blue Butte Substation 345/115 kV	----	2017
BEPC	Indian Hill Substation 345/115 kV	----	2017
BEPC	Gumbo Creek-Blue Butte-Indian Hill 345 kV		2017

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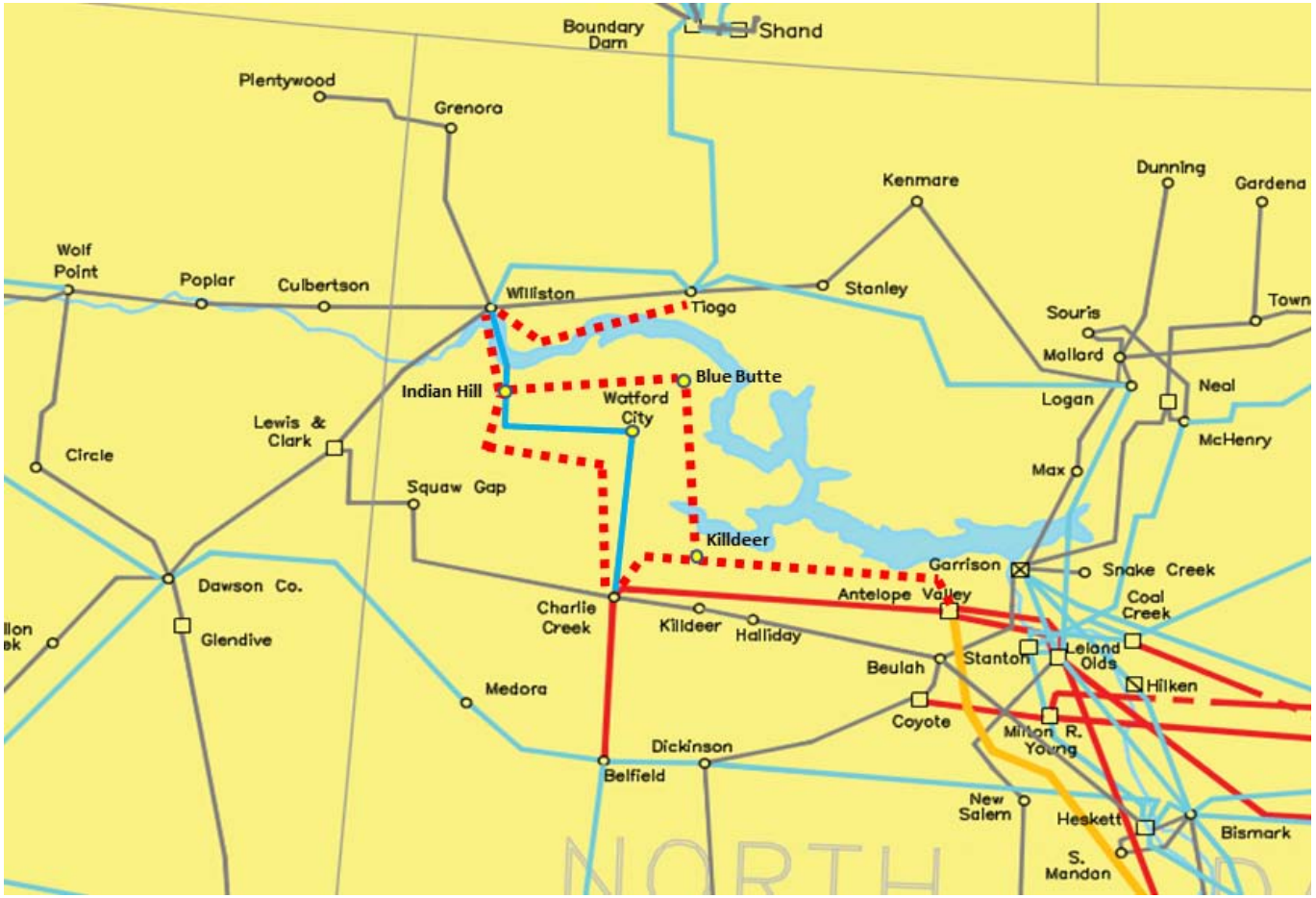
Facility Additions and Improvements: Eastern MT and Western ND cont…



Western Area Power Administration

Facility Additions and Improvements: Eastern MT and Western ND cont…

Planned T-Line Upgrades

Company	T-Line	Existing Rating Norm (Emerg.)	New Rating	Completion Date
Planned Upgrades				
BEPC/WAPA	Belfield-Charlie Creek 345 kV	320 (390)	>390 MVA emergency w/addition of parallel Belfield 345/230 kV Transformer	3/2014
BEPC	Logan-SW Minot 115 kV Reconductor	141 (141) MVA	180 MVA or greater	2015

Planned Transformer Additions and Replacements

Company	Location	Size MVA	In-Service Date
Planned Additions and Replacements			
BEPC	Judson 345/230 kV	672	2016
BEPC	Tande 345/230 kV	672	2017
WAPA	Williston 230/115 kV	200	11/2013
WAPA	Belfield 345/230 kV	250	New parallel transformer at Belfield. In-Service: 3/2014 (old Leland Olds transformer)
COE	Garrison 230/115 kV	200	2014
WAPA	Watford 230/115 kV	167	12/2013

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Facility Additions and Improvements: Central and Eastern ND

Planned and Proposed Transformer Additions and Replacements

Company	Location	Size MVA	In-Service Date
Planned Transformer Additions and Replacements			
WAPA	Fargo 230/115 kV (KV2A)	200	After 2015
WAPA	Fargo 230/115 kV (KV1A)	200	After 2015
WAPA	Retirement of Fargo 115/69 kV (KY3A)	42 MVA	2015 or later

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Facility Additions and Improvements: Western SD

Planned Projects

Company	Location	Size	In-Service Date
WAPA	Philip 115 kV Capacitor	2x15 MVAR	7/2014
WAPA	RCDC-Rapid City 115 kV line	----	Completion in 2015. Includes a 230/115 kV connection at RCDC
COE	2nd 230/115 kV Oahe Transformer	150	2015
WAPA	New Underwood 230/115 kV KV1A Replacement	200	2017
COE	Oahe Substation	---	2015: Existing 230 and 115 kV double breaker/double bus bays will be populated.
COE	Fort Randall Substation	---	2015: Limiting breakers, jumpers and buswork will be upgraded and dedicated transformer breakers will be installed.

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Facility Additions and Improvements: Eastern SD

Planned and Proposed Capacitor Projects

Company	Location	Total Size	Size	In-Service Date	Status
WAPA	Spencer 161 kV	25 MVAR	1x25 MVAR	2015	Planned
BEPC/ERC	Ordway 115 kV	16 MVAR	2x8 MVAR	2014-2015	Proposed

Proposed Transmission Line Projects

Company	Location	Options	In-Service Date
Proposed Line Additions			
BEPC/ERC	Ordway-Aberdeen Siebrecht 115 kV	#1	These are options being considered to mitigate low voltages present at Ordway. In-Service after 2016.
BEPC/ERC	2nd Groton-Ordway 115 kV	#2	

Facility Additions and Improvements: Eastern SD cont…

Planned and Proposed Transformer Additions and Replacements

Company	Location	Size MVA	In-Service Date
Commited (Planned) Transformer Additions and Replacements			
WAPA	Sioux Falls 230/115 transformer replacement	200	Both transformers will be replaced and the normally open Sioux Falls-Lawrence 115 kV line will be closed. To be completed in 2014.
WAPA	Spencer 161/69 kV Transformers	150	Includes LTCs, removal of a voltage regulating transformer, installation of dedicated transformer breakers, installation of a series 161 kV bus sectionalizing breaker and installation of a 25 MVAR capacitor on the 161 kV bus. Transformers will be replaced with a single 150 MVA. To be completed in 2015.
WAPA	Granite Falls KY2A Replacement	63	2015 or later. Replacement driven by age and condition of transformer.

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Questions?

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