COLLABORATIVE APPROACH TO UNIFIED SYSTEM OPERATIONS

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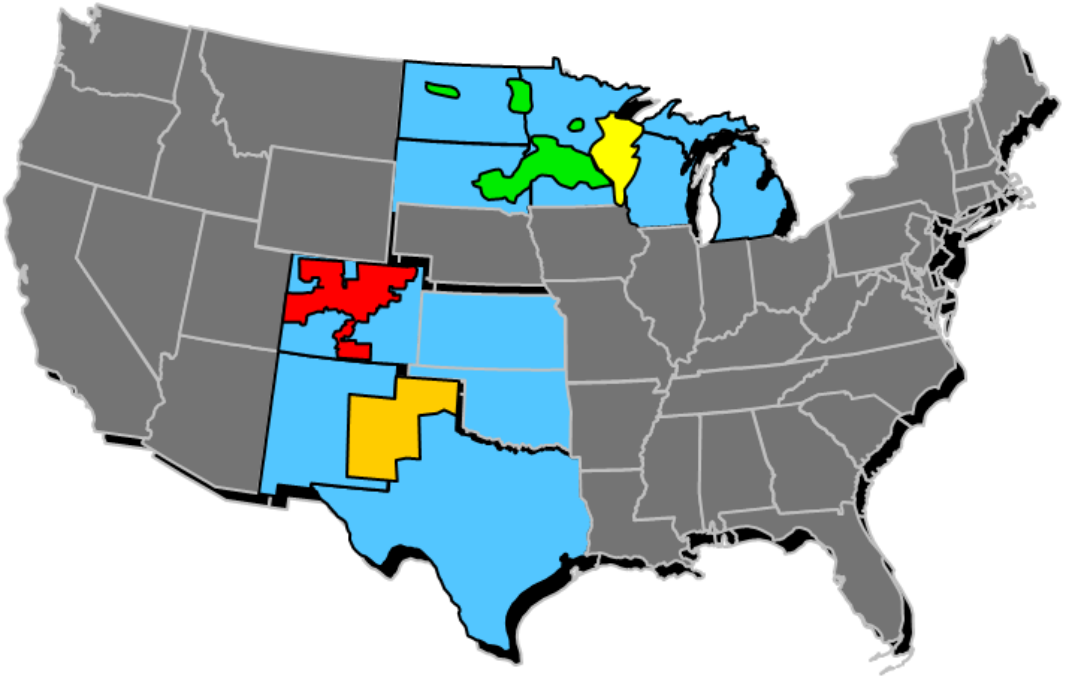
XCEL ENERGY INC.

- Major integrated utility
  - Generation
  - Transmission
  - Distribution
  - Gas
- No. 1 wind energy provider
- Top 5 in Energy Efficiency programs
- Industry-leading voluntary emission reductions



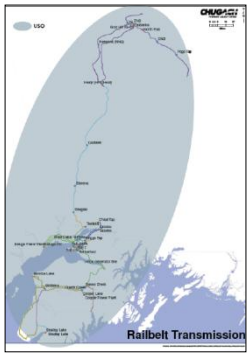
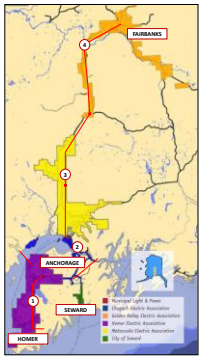
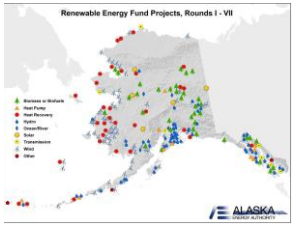
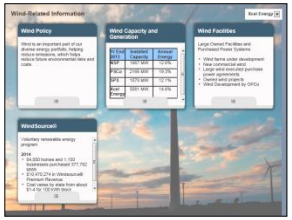
XCEL ENERGY TRANSMISSION

- Industry leader in transmission
- 19,000 transmission line miles
- 1,200 substations
- Assets in 10 states
- 2 RTOs (MISO & SPP); Non-RTO west
- 3 NERC Regions
- $4.5 billion investment 2015-2019

- Maintain in-house capability to execute all phases of a transmission project
- Frontline control and ownership of project risk to achieve the Best Value Delivery Model
- Extensive experience in delivering major transmission build outs
- Safety woven into everything we do

ALASKA & XCEL ENERGY

The right partnership based on common values & experiences

Examples	1. Establish Independent System Operator	2. Major Transmission Build Out Programs	3. Generation Diversification	4. Renewables Integration	5. Conservation & Community
	 *In the process of creating the Unified System Operator*	 *Railbelt projects identified to date + USO future recommendations*	***Senate Bill 138 – Alaska Affordable Energy Strategy*** *Plan and recommendations to the Legislature on infrastructure needed to deliver affordable energy to areas in the state that do not have direct access to a North Slope natural gas pipeline. Due: January 1, 2017* *Planning for EPA's Clean Power Plan*	 *Railbelt USO implementation and System Build Out needed to support significant renewable integration*	• *Goal - Reduce per capita energy use by 15% by 2020* • *Energy Assessments* • *Weatherization Programs* • *Home Energy Rebates* • *Energy Assistance*
Xcel Energy® RESPONSIBLE BY NATURE®	MISO SPP Southwest Power Pool MAPP *Deep experience in the details of forming and working within independent system operator (ISOs)*	*CapX2020; SE New Mexico Oil Patch; ~$1B in annual capital spend*	MERP Minnesota KING REHABILITATION PROJECT COLORADO Clean Air– Clean Jobs *Legislative supported major emission reduction programs while maintaining a balanced generation portfolio*	 *Advanced forecasting system to manage the integrations of ~5,300 megawatts of wind; Max Hourly % Load reached **60.5%** (PSCo)*	REBATE$ Xcel Energy AVAILABLE • *Energy efficiency program goals are set annually* • *Since 1992, we have been able to avoid more than 16 medium base-load power plants (250MW)* • *Xcel Energy offers over 90 electric and gas programs across our states*

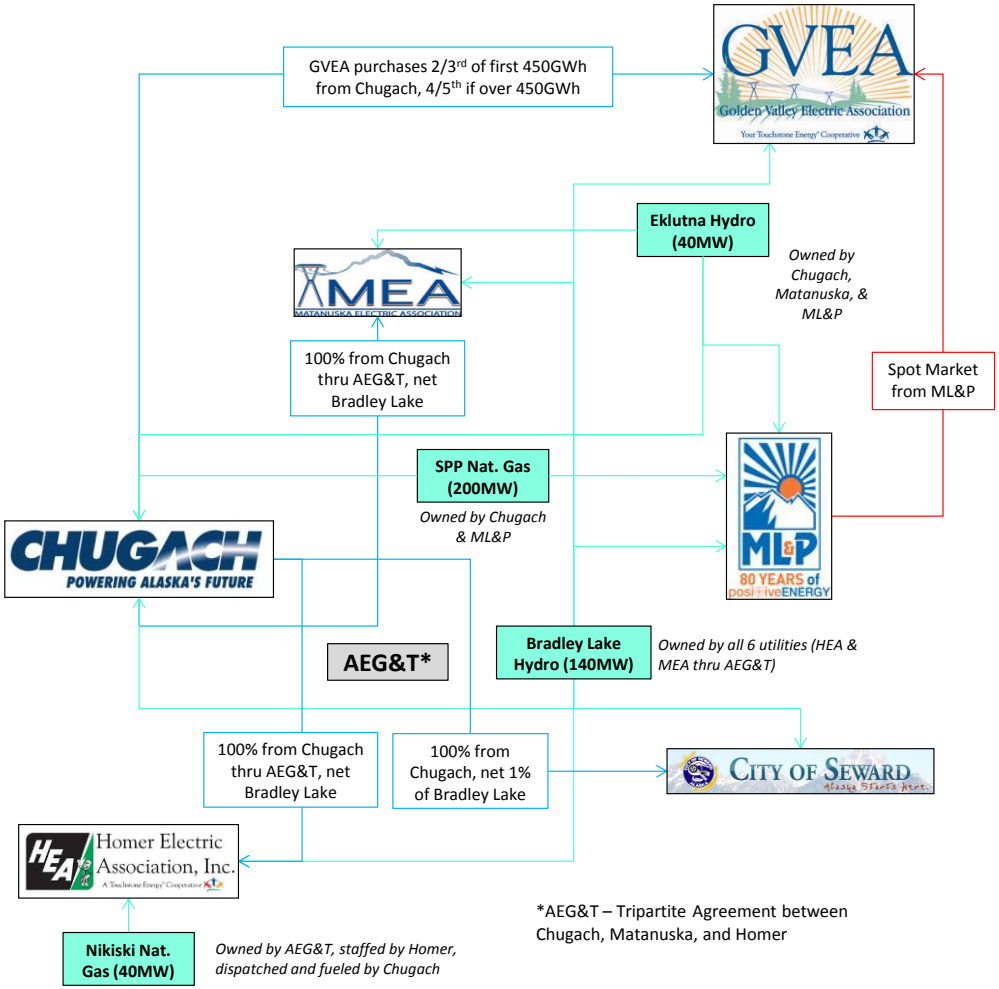
ALASKA RAILBELT DISCUSSION

ALASKA RAILBELT DISCUSSION

Our understanding

- Current state system result of individual utility system planning
- Multiple contractual relationships in-place between the Alaskan Railbelt utilities
- Utilities have added generation reserves to address the lack of transmission
- Customers have energy cost concerns
- Regional transmission plus economic dispatch are needed to lower electricity costs, increase reliability, and enable energy supply options

Railbelt Utilities Contractual Relationships



ALASKA RAILBELT DISCUSSION

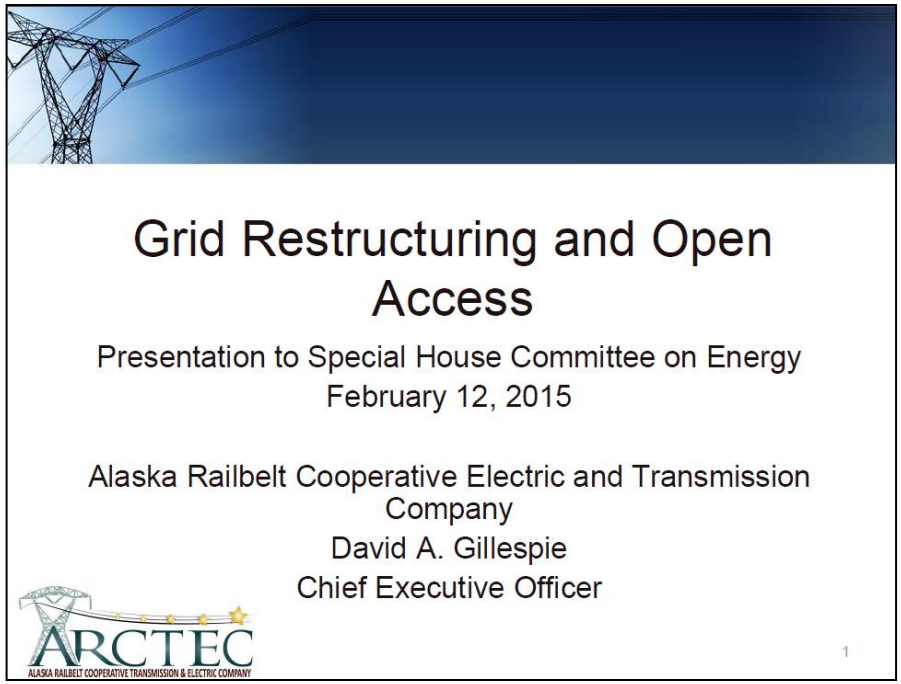
Our understanding

- Utilities, through ARCTEC, appear to have made good progress to organize and set the groundwork to form a Unified System Operator (USO)

- Guiding principles have been set & are sound:
  - Governance based on a stakeholder process
  - Regulatory Commission of Alaska jurisdiction / regulatory compact
  - Nationally recognized reliability standards
  - Set interconnection standards
  - Plan system upgrades
  - Non-discriminatory access and service
  - Economic dispatch
  - Respects existing agreements and investments

  Source: Grid Restructuring and Open Access presentation to Special House Committee on Energy

- Independent system operator is needed to deliver the full economic benefits of a unified Alaska system



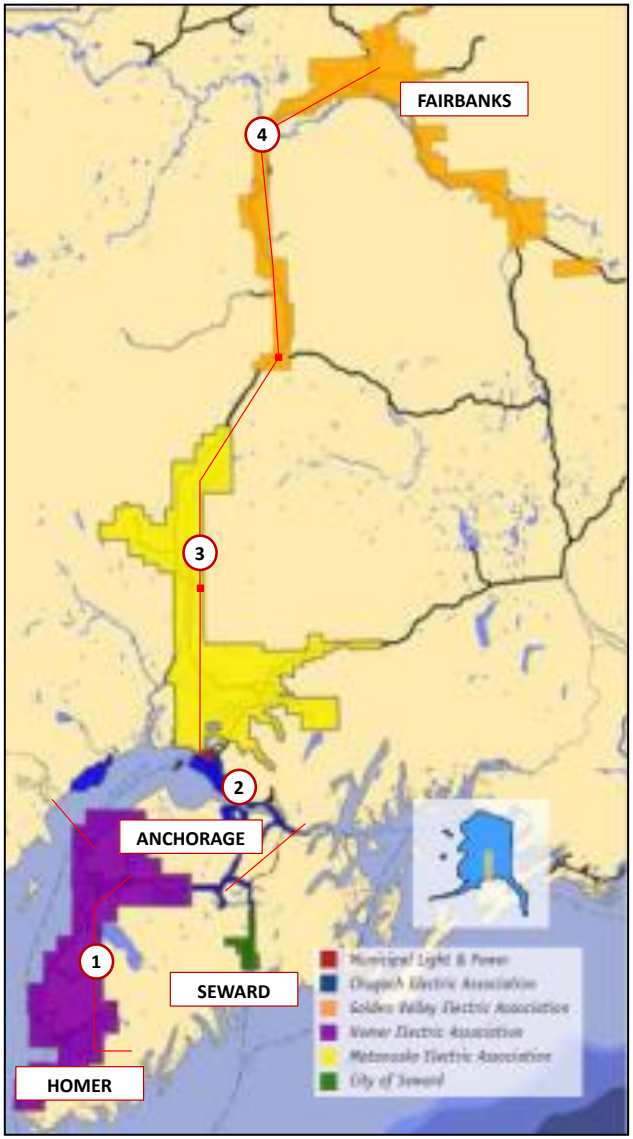
ALASKA RAILBELT DISCUSSION

Our understanding

- Study efforts have identified projects to begin to address the Railbelt transmission needs
- Railbelt Transmission Integration Plan is one solution and consists of $903M in transmission projects:

PROJECT	CAPITAL ESTIMATE	BENEFIT/ COST RATIO
1. Kenai-Anchorage Transmission	$389M	2.9
2. South Central Alaska Reliability	$21M	1.2
3. North Intertie - A	$368M	4.1
4. North Intertie - B	$113M	3.7

- Projects provide significant increases in economic benefit, future reliability development, and energy supply options



ALASKA RAILBELT DISCUSSION

Key considerations for Legislature

- Successful transmission build outs & establishment of a USO need support from policy makers, state leaders, and regulators
- Ensure the RCA is empowered with clear regulatory authority
- Support non-traditional financing approaches
- Encourage transparent cost recovery to attract capital investment
- Industry lessons learned

CASE STUDY
CAPX2020 TRANSMISSION EXPANSION

CAPX2020 TRANSMISSION EXPANSION

Situation

- Region's utilities had experienced 10+ years of failed attempts to get "organized" for transmission development (e.g., Transco, ISO)
- Uncertain revenue recovery froze transmission investment
- The transmission system continued to be stressed
  - Business development and area growth
  - Generation diversification through long term planning and state policy
  - Increasing system congestion and area reliability problems over a large geographic footprint
- State and Federal policies continued to evolve

Xcel Energy and area utilities along with the state and other interested stakeholders recognized that a new approach was needed…

CAPX2020 TRANSMISSION EXPANSION

Shared vision & commitment

- Formed Spring 2004 to address system concerns
- Collaborative approach to grid expansion
- Started with 4 utilities, grew to 11
  - Electric cooperatives
  - Municipal G&Ts
  - Investor-owned utilities
- Incorporated lessons learned from past attempts
- Serving MN and portions of WI, ND and SD

CapX2020
Delivering electricity you can rely on

Otter Tail Power Company
Xcel Energy
Great River Energy
Dairyland Power Cooperative
MPA
rpu we pledge, we deliver
Missouri River Energy Services
minnesota power an ALLETE company
Southern Minnesota Municipal Power Agency
WPPI energy
Minnkota Power Cooperative, Inc. Your Touchstone Energy® Partner

CAPX2020 TRANSMISSION EXPANSION

Build what is right for the region

- $2 billion investment by the 11 partner utilities
- 700 miles of 345 kV transmission; 70 miles of 230 kV transmission
- Key alignment with regulators and policy makers
- Projects critical as foundation for future transmission
- Provide needed transmission capacity to support energy supply options and implement energy policies

CAPX2020 TRANSMISSION EXPANSION

Projects structured for collaboration

CapX2020 Vision Team *– Long Term Planning & Stakeholder Management*

BROOKINGS Project Management Committee	FARGO Project Management Committee	LA CROSSE Project Management Committee	BEMIDJI Project Management Committee
Great River Energy	Great River Energy	rpu – we pledge, we deliver	Great River Energy
MLPA	minnesota power	Southern Minnesota Municipal Power Agency	Minnkota Power Cooperative, Inc.
Missouri River Energy Services	Missouri River Energy Services	WPPI energy	minnesota power
Otter Tail Power Company	Otter Tail Power Company	Dairyland Power Cooperative	Otter Tail Power Company
Xcel Energy – Responsible by Nature	Xcel Energy – Responsible by Nature	Xcel Energy – Responsible by Nature	Xcel Energy – Responsible by Nature

Core Principles

Project Specific Contracts

Cross – Project Collaboration *– Strategic Execution through Project Management Office*

CAPX2020 TRANSMISSION EXPANSION

Key success factors

- Alignment with regulators and policymakers to enact enabling legislation
- Collaboration through all phases with all stakeholders - *Utilities, Regulators, Legislators, Environmental groups, & Landowners*

Results

- CapX2020 Phase 1 implementation is nearing completion
- Total regional economic impact estimated at $4B - *Study performed by University of Minnesota Duluth School of Business*
- CapX2020 partner relationships remain strong and continue to collaborate to address regional challenges

XCEL ENERGY PROPOSAL & COLLABORATION WITH ALASKA

XCEL ENERGY PROPOSAL

- Long term partnership with Alaska utilities and stakeholders to **collaboratively transform** the transmission system to lower customer costs, increase reliability and set the foundation for future growth
  - Leverage Xcel Energy's extensive experience in developing independent system operator organizations to **speed the implementation** of the Alaska USO
  - Invest with Alaska utilities to **construct transmission facilities** identified by current study efforts (and by future USO) helping to alleviate state budget and utility balance sheet constraints
  - Own transmission **with the Alaska utilities** (as they are willing and able)
  - Facilitate improvements in system operations – increasing reliability & **reducing the cost of service**

ROADMAP TO IMPLEMENTATION

ROLES BY ENTITY

LEGISLATURE — Alaska Energy Policy Maker

RCA — Alaska Energy Policy Implementer

USO — Independent Power System Operational Oversight and Control

TRANSMISSION OWNERS

Invest in Transmission Assets and Run Day-to-Day Operations

GENERATION OWNERS

Provide Energy Supply Options to Buyers

ROADMAP TO IMPLEMENTATION

TASKS BY ENTITY

LEGISLATURE

- Define desired model for Railbelt electric system based on June 25th report
- Clarify the RCA's authority to implement desired model
- Incent utility participation

RCA

- Define specific attributes and implementation of USO organization
- Validate and adopt Railbelt Plan
- Set resource planning requirements
- Set reliability standards

USO

- Economic generation dispatch
- Unified transmission tariff
- Revenue requirements administration
- Generator interconnection process
- Regional transmission planning process

Xcel Energy can provide RTO/ISO experience to speed implementation

TRANSMISSION OWNERS

- Construct, operate, and maintain transmission grid in accordance with applicable requirements
- All utilities keep assets and have role in future transmission ownership

Xcel Energy collaboratively invests in Railbelt transmission with Alaskan utilities

GENERATION OWNERS

- Negotiate PPAs with buyers; become "network resource"
- Utilize grid; pay single unified transmission tariff to deliver
- Respond to real-time dispatch instructions from USO

THANK YOU

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