Railbelt Reliability Council (RRC), SB 123, HB 307, and where we go from here

prepared for:

Senate Resources 5/14/2025

by:

Gwen Holdmann / Steve Colt
Alaska Center for Energy and Power
University of Alaska Fairbanks

ACEP
Alaska Center for Energy and Power

UAF
UNIVERSITY OF ALASKA FAIRBANKS

Questions to be addressed

1. What do we need for a healthy electric grid ecosystem?
2. Railbelt Reliability Council (RRC) - How did we get here?
3. What problems was SB 123 addressing via the RRC?
4. What does the RRC do?
5. Why are reliability standards and integrated resource planning (IRP) bundled together?
6. What about HB 307 and the Railbelt RTO?

Q1: Ingredients for a healthy grid ecosystem

These functions work together to enable:

- 💰 Efficient, cost-effective investments
- 🔓 Maximum participation from independent generators and third parties
- 🌐 System-wide coordination that supports reliability and ratepayer value

Healthy Grid Ecosystem

GOAL: affordable & reliable energy

Reliability Standards

Maintains grid stability through technical rules, contingency planning, and enforcement mechanisms.

Independent Regulator

ensures fair rates, enforces non-discriminatory access, and protects public interest

System-wide Planning

Identifies long-term needs for generation and transmission; process should be transparent, inclusive, and data-driven.

System-wide Development (e.g. transmission)

Implements those long-term plans by advancing shared infrastructure projects

Economic Dispatch Structure

Optimizes which generators run and when, minimizing total system cost.
(e.g., single G&T, ISO, Transco, tight power pool)

Real-time Balancing

Maintains second-by-second balance between supply and demand. Supports frequency stability, coordinates reserves, and prevents blackouts across defined areas.

Decades

Years

Days, hours, minutes

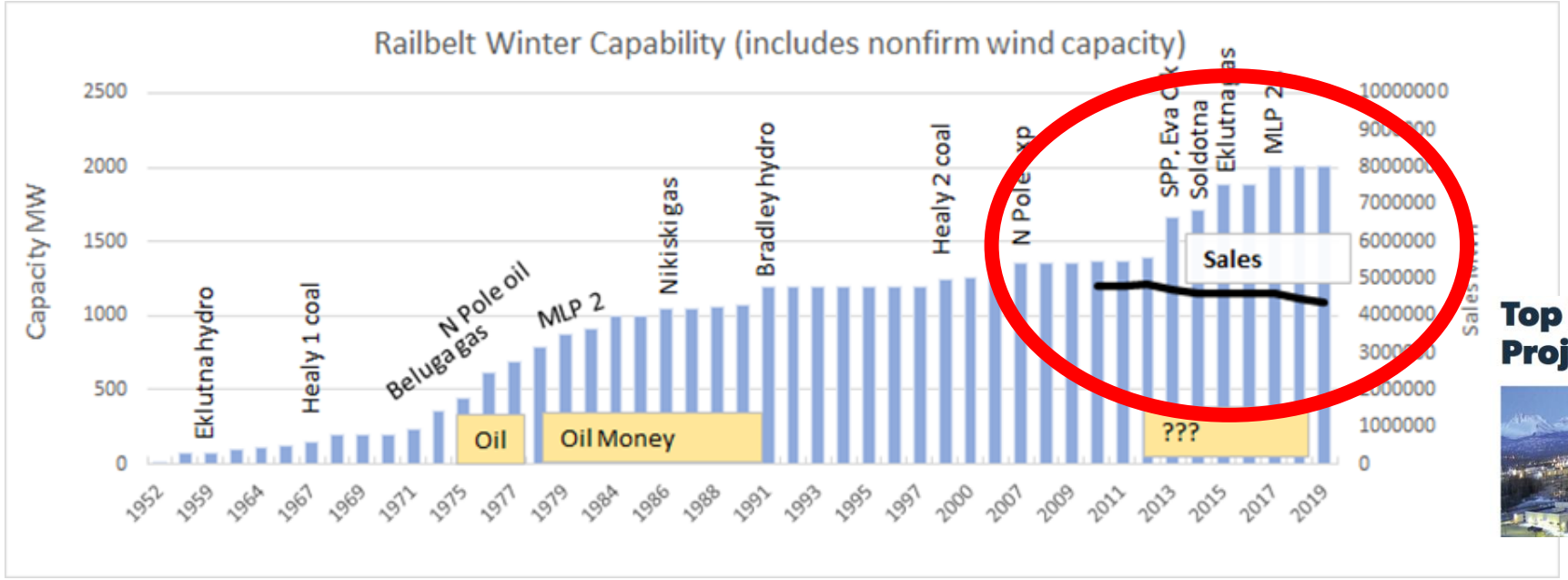
seconds

ACEP Alaska Center for Energy and Power

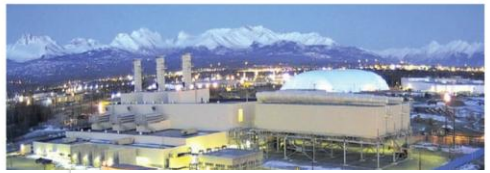
UAF UNIVERSITY OF ALASKA FAIRBANKS

Q2: RRC - How did we get here? Timeline: Pre-2015

2010 – 2015: “$1.5B” of new generation built by Railbelt utilities, while sales declined



Top Plant: Southcentral Power Project, Anchorage, Alaska



May 2014: $250k capital approp. to RCA to determine “whether creating an independent system operator or similar structure for electrical utilities in the Railbelt area is the best option for effective and efficient electrical transmission”

June 2015: RCA recommendations letter

Notes. 1.5B figure from Pickett letter to Legislature June 30, 2015.
May 2014 $250k approp from SB 119 excerpt:
https://www.akleg.gov/basis/get_documents.asp?session=31&docid=47623

Timeline: June 2015 RCA recommendations

Rec 1: Independent transmission company

"An independent transmission company should be created"… [and] RCA should have "siting authority for new generation and transmission" and "explicit authority to regulate integrated resource planning" for the Railbelt.

Rec 2: Promote "system-wide merit order economic dispatch",

by voluntary action and/or "specific action steps."

Rec 3: Allow time for voluntary actions

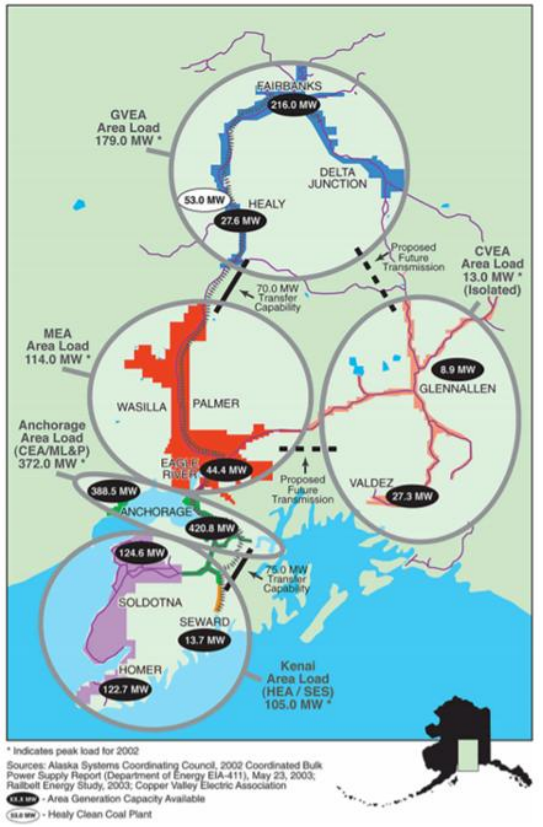
[about 1 year for initial filings]

Rec. 4: Reliability standard

RCA "strongly encourages [Railbelt utilities] to develop a common Railbelt operating and reliability standard"

Rec 5: Adequate funding for RCA

(via Regulatory Cost Charge)



Sources: RCA Letter of June 30, 2015:
https://www.akleg.gov/basis/get_documents.asp?session=31&docid=36931

Timeline: Volunteer efforts through 2019

- RCA Order #13 in I-15-001, March 2019, recounts:

  "Acting on behalf of several Railbelt electric utilities, ARCTEC hired a consultant to provide recommendations on establishing an organization that would act as the entity responsible for establishing and enforcing Railbelt reliability standards and (among other things) performing regional integrated resource planning for the Railbelt."

- **The consultant, GDS, recommended a Railbelt Reliability Council (RRC) be created:**

  For reliability standards, a miniature version of federal policy:

  - 2005 Energy Policy Act created the concept of ERO
  - 2006: North American Electric Reliability Corporation (NERC) was designated by FERC as the ERO for the U.S. Grid.

  For IRP function, GDS apparently followed Rec. 1 of the June 2015 RCA Letter.

- **RRC MOU:** On December 18, 2019, six Railbelt utilities signed the MOU for the creation of the RRC. [But, for economic dispatch GDS said….study it some more…]

Sources: RCA Order #13 in I-15-001; RCA Tracking number 19-0055, https://rca.alaska.gov/RCAWeb/Filings/EDocList.aspx?id=a09a0b59-ff23-4105-99be-c554f6d1c9c2

NERC history: https://www.nerc.com/news/Documents/NERCHistoryBook.pdf page viii, and page 6: "By 1971, every Region in the United States and the above Canadian provinces had a voluntary Regional Reliability Council"; North American Electric Reliability Corporation grew from N Am Elect. Reliability *Council* in 2006, to serve as the U.S. ERO.

Timeline: 2019: RCA proposes legislative language

- June 2019: Alaska Railbelt Transmission Co abandons its application.
- RCA feels statutory authority is needed to implement RRC as an ERO.
- March 2019 Order #13, docket I-15-001: “Attached as an appendix to this order is draft legislative language that provides us with:
  - express authority to certificate and regulate an ERO

[and]

  - “a legislative grant of siting authority for new generation and transmission in the Railbelt, and explicit authority to regulate integrated resource planning for the Railbelt electric system.”

Sources: RCA Order #13 in I-15-001; RCA Tracking number 19-0055, https://rca.alaska.gov/RCAWeb/Filings/EDocList.aspx?id=a09a0b59-ff23-4105-99be-c554f6d1c9c2
Appendix with draft language: https://rca.alaska.gov/RCAWeb/ViewFile.aspx?id=b80cdba2-d472-4bb4-b727-86fe93b01f62

Timeline: 2020: SB 123

1/15/2020 Letter from RCA to President Giessel & Speaker Edgmon

3/10/2020 CSSB 123(RBE) passed Senate 19-0. (RBE = Special Committee on Railbelt Electric System)

3/19/2020 CSSB 123(RBE) passed House 33-1 (As amended on H floor)*

3/20/2020 Senate concurs in amendment 17-3.

Essentially, SB 123 passed unanimously, with minor modifications.

And, Chugach merged with Anchorage Municipal Light & Power (!)

Notes: Letter from RCA Jan 2020
https://www.akleg.gov/basis/get_documents.asp?session=31&docid=59281
*Am #2 broadens the scope of telephone utility cooperatives to include “related telecommunications services”, and allows utility coops to use email, zoom, etc. to conduct business and voting.

Q3: What problems was SB 123 trying to address via RRC?

Going back to the RCA findings in its June 2015 letter:

"Concerns about the fragmented, balkanized and often contentious Railbelt utilities have been raised numerous time over the past 40 years. Several efforts have been made to reform and reorganize the Railbelt electrical system, but none have succeeded."

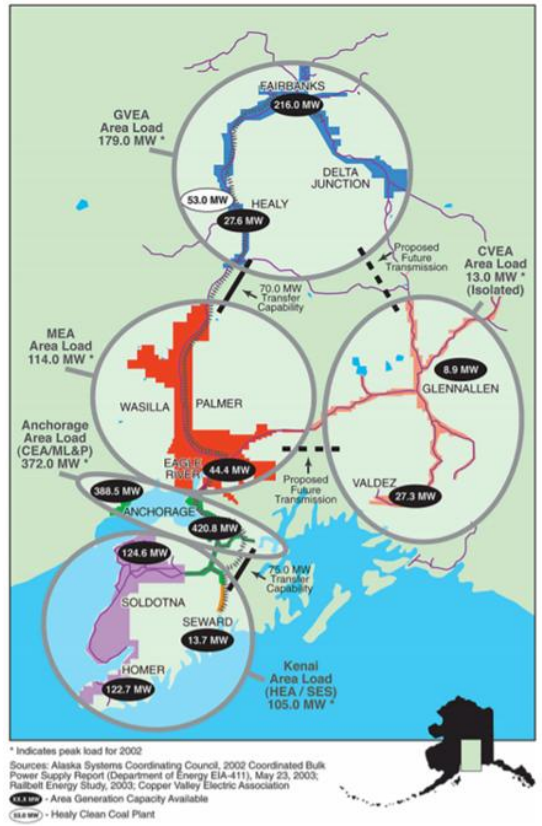
This preamble led to the RCA's 2015 recommendations and the voluntary actions during 2015-2019, which culminated in RCA's request for legislation.

Along the way, other things fell by the wayside. Thus,

SB 123 addressed a surviving, or perhaps a feasible, subset of the 2015 RCA recommendations.

Q3, cont.

Which 2015 Recommendations survived into SB 123?



Rec 1: Independent transmission company

"An independent transmission company should be created"… [and] RCA should have "siting authority for new generation and transmission" and "explicit authority to regulate integrated resource planning" for the Railbelt.

Rec 2: Promote "system-wide merit order economic dispatch",

by voluntary action and/or "specific action steps."

Rec 3: Allow time for voluntary actions

[about 1 year for initial filings]

Rec. 4: Reliability standard

RCA "strongly encourages [Railbelt utilities] to develop a common Railbelt operating and reliability standard"

Rec 5: Adequate funding for RCA

(via Regulatory Cost Charge)

Sources: RCA Letter of June 30, 2015:
https://www.akleg.gov/basis/get_documents.asp?session=31&docid=36931

Q4: What does the RRC do? And NOT do?

The RRC promulgates reliability standards and develops IRP (which includes transmission planning)

Reliability standards –

- provide for “reliable operation” of the “interconnected” network..
- RCA may initiate a standard on its own motion

IRP – provide “greatest value” - enables reliability to be traded off against excessive cost

- use “full range” of resources: “generation, **transmission**, battery storage, and conservation or similar improvements in efficiency…”
- “regardless of the location or ownership” of resources
  - [Does this help move us to economic dispatch?....maybe]

Large project pre-approval - linked to IRP process:

- Largely between utilities and RCA – i.e, the RRC does NOT approve large projects
- *And yet*, Projects included in the “preferred portfolio” of a RCA-approved IRP are deemed pre-approved.

RRC does NOT operate a market or dispatch resources. Utilities maintain control over most generation and dispatch decisions within their service territories (exception Southcentral tight power pool).

Q5. Why are reliability standards and regional planning (IRP) bundled together as RRC tasks?

- This is somewhat unusual. Reliability standards under an ERO mimic U.S. practice, but IRP function in L48 is done by numerous individual utilities; transmission by RTO or ISO.

Function	Typical U.S. Practice	Alaska (Post-SB123)
Reliability	Handled by NERC or regional entities (e.g. WECC)	RRC (ERO)
Planning (IRP)	Done by individual utilities, overseen by state regulators	RRC (ERO)
Transmission Planning	Often done by RTO/ISO with utility input	RRC (ERO)

Reliability standards and IRP are the pruned version of the larger tree: Original ideas for RRC included:

1) Reliability standards
2) Planning
3) Interconnection protocols
4) Further assessment of economic dispatch

[3) and 4) were deferred/dropped, leaving 1) + 2).]

Key Provisions of AS 44.83.700 (from HB 307)

1. **Establishes the Railbelt Transmission Organization (RTO)** within AEA, tasked with managing an open-access transmission tariff for the Railbelt's backbone transmission system.
2. The RTO is responsible for pooling and allocating backbone transmission costs among load-serving entities to ensure nondiscriminatory access to the grid.
3. Lays the institutional groundwork for future coordination.

Key Provisions of AS 44.83.700 (from HB 307)

1. **Establishes the Railbelt Transmission Organization (RTO)** within AEA for the purpose of establishing an open access transmission tariff that

   (1) provides for recovery of transmission costs and related ancillary services;

   (2) replaces wholesale charges assessed by unit by each utility in the Railbelt with a new mechanism that fairly recovers and equitably allocates the costs of operating the backbone transmission system.

> The Alaska RTO, as currently structured, does not make decisions about future transmission investments (planning), implement those decisions (development), or dispatch resources (operations). Its role is focused on managing the open-access transmission tariff and cost allocation for the backbone transmission system.

These functions work together to enable:

- 💰 Efficient, cost-effective investments
- 🔓 Maximum participation from independent generators and third parties
- 🌐 System-wide coordination that supports reliability and ratepayer value

Healthy Grid Ecosystem

GOAL: affordable & reliable energy

RRC

Reliability Standards

Maintains grid stability through technical rules, contingency planning, and enforcement mechanisms.

RCA

Independent Regulator

ensures fair rates, enforces non-discriminatory access, and protects public interest

RRC

System-wide Planning

Identifies long-term needs for generation and transmission; process should be transparent, inclusive, and data-driven.

?

System-wide Development (e.g. transmission)

Implements those long-term plans by advancing shared infrastructure projects

Economic Dispatch Structure

Optimizes which generators run and when, minimizing total system cost.
(e.g., single G&T, ISO, Transco, tight power pool)

Real-time Balancing

Maintains second-by-second balance between supply and demand. Supports frequency stability, coordinates reserves, and prevents blackouts across defined areas.

RTO, CEA/MEA TIght Pool

grey areas = progress has been made, but there exists opportunities for additional process improvement/ legislative action

RTO - Current Status & Future

1. RTO has been formally certificated by RCA
2. Governance Committee meeting on Friday 5/16 to consider Draft Backbone Transmission System Policy proposed by the Working Group; list of qualifying assets and considerations for revenue mechanism (OATT).
3. The RTO is expected to assume operational control by July 1, 2026, with ongoing meetings and stakeholder engagements to refine its structure and policies.

…. RTO also lays the institutional groundwork for greater future coordination.

Additional Topics: Net metering versus net billing Example 1:

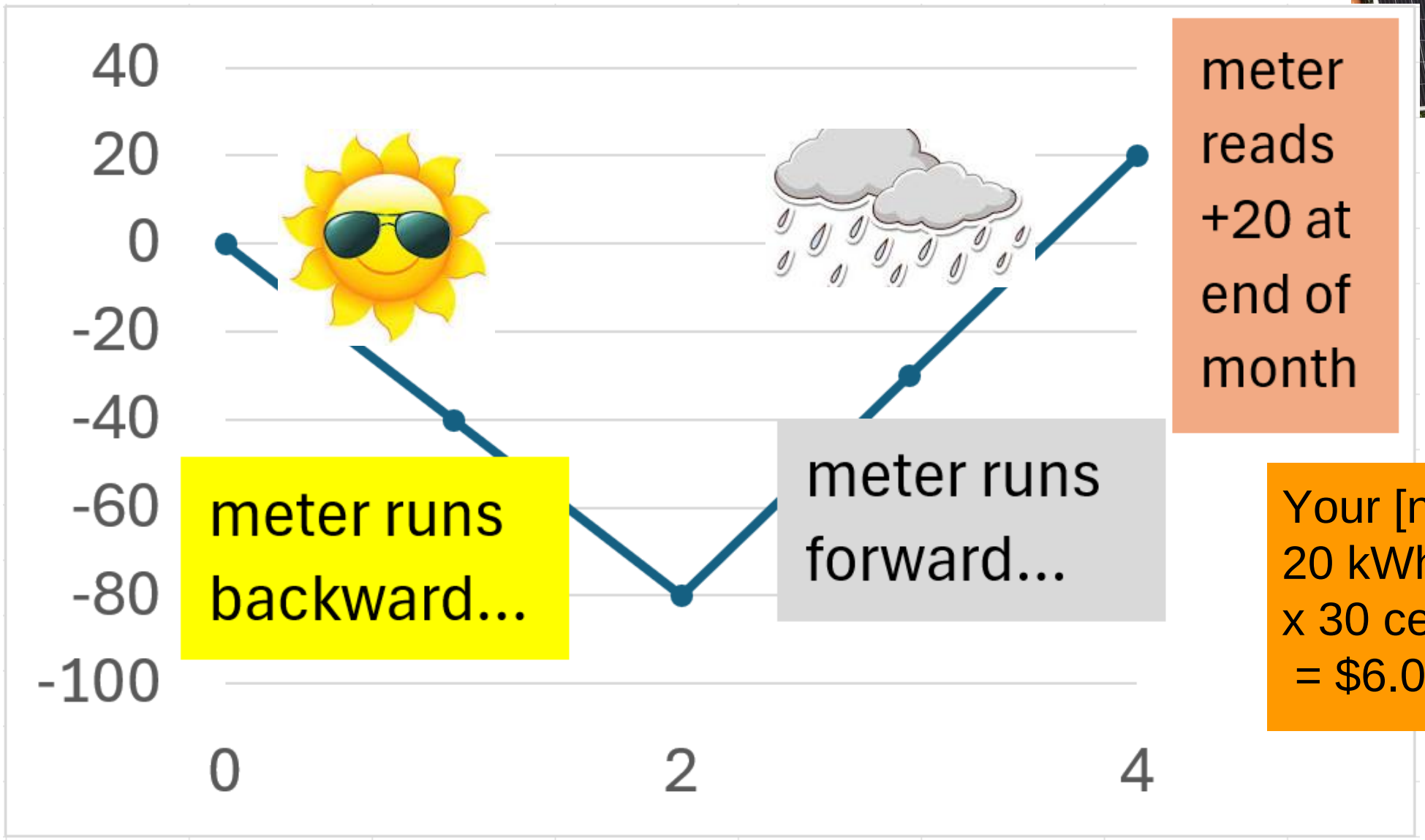
During sunny weeks 1-2, you produce 80 more kWh than you draw from the grid**.** You are 80 kWh ahead. Your meter has run backwards by 80 kWh, shows -80. You have 80 kWh "in the bank."

During cloudy weeks 3-4, you draw 100 kWh more than you produce. The meter runs forward 100 kWh. End of month, it sits at 20.

Billing time! The meter shows -80 + 100 = 20 for the month. The excess production during sunny weeks has been netted against the "excess" consumption during cloudy weeks. You owe the utility 20 kWh x 30 cents per kWh retail rate = $6.00

This is monthly "net metering." Within the month, one kWh injected into the grid trades for one kWh drawn from the grid. kWh for kWh. At the end of the month, the net consumption of 20 kWh turns into a net bill. One kWh trades for 30 cents. kWh for $$. Some people might call this monthly net billing (!)

Net metering versus net billing: Example 1, continued



Your [net!] bill:
20 kWh purchased
x 30 cents per kWh
= $6.00

Net Metering versus net billing: Example 2

During sunny weeks 1-2, you produce 1,000 more kWh than you draw from the grid; meter runs backward to reach -1000.

During cloudy weeks 3-4, you draw 100 kWh more than you produce; meter runs forward by 100 kWh to reach -900.

Billing time! The meter shows *minus* 900 for the month.The sunny injection of 1,000 has been netted against the cloudy draw of 100. The utility pays you for 900 kWh, but at the avoided cost rate of 6 cents per kWh. 900 x 6 cents = $54.00.

Again, the monthly net kWh turns into a monthly net bill.

Net Metering versus net billing: Example 2: continued

Your [net!] bill:
900 kWh sold
x 6 cents per kWh
= $54.00

meter reads *minus* 900 at end of month

meter runs backward...

meter runs forward...

Net Metering versus net billing: Example 3:

What about ***Annual*** "Net Metering"

During June sunny weeks 1-2, you produce 1,000 more kWh than you draw from the grid**.** You are 1,000 kWh ahead. Your meter has run backwards by 1,000 kWh. You have 1,000 kWh "in the bank."

During June cloudy weeks 3-4, you draw 100 kWh more than you produce. Your meter runs forward 100 kWh. It sits at minus 900.

Under *Annual* "net metering", you *Roll Forward* the credit into July. If you pile up more excess production, you roll the cumulative credit into August….and….

Repeat, while the sun shines….

Net Metering versus net billing: Act 3:

Annual "Net Metering"

During winter, the meter runs forward and the credit drops, but it continues to roll forward from month to month. Just like eating a stored harvest of sunshine.

Settlement time occurs in March (say). Read the meter:

- If it has run forward over the entire previous year, you pay for the net consumption, at the retail rate.
- If it has run backward, the utility likely pays you for your net production, at the avoided cost rate.
- But the settlement could also occur in other ways. For example, any accrued credit could simply expire.
- Some people would call this annual net billing(!)

Hybrid arrangements are possible…e.g. bank the July kWh injections as dollars using the summer retail rate; withdraw banked dollars as kWh using the winter retail rate.

UNIVERSITY OF ALASKA FAIRBANKS

Net metering vs net billing: Summary

- If you are offsetting one kWh drawn from the grid with one kWh injected into the grid, kWh for kWh, that is net metering.
  - The meter is going backwards and forwards, and no one is reading it.
- When you convert kWh into $$, it becomes net billing.
  - The rates at which you convert kWh into $$ matter a lot for the economics of rooftop solar.
- Under monthly netting, net metering turns into net billing once per month. You might sell a lot of energy injected in July for 6 cents and then buy a lot of grid energy in December for 30 cents.
- Under annual netting, kWh injected in July can directly offset kWh drawn from grid in December - no selling or buying until March. You might end up in March with close to a perfect offset, such that every solar kWh produced has saved you 30 cents.

Additional references and supporting material

Alaska's Railbelt Ecosystem

Generation

Transmission

Distribution

Retail

IPPs:

- Aurora Energy
- Renewable IPP
- CIRI
- AK Environmental Power
- UAF

Rooftop & community solar vendors

Regional Level:

RCA

RRC

RTO

Considerations re: RTO Revenue Mechanism/OATT

- How should rates established by existing agreements be accounted for in the OATT?
- How should BTS costs be allocated – coincident peak, load ratio share, or a combination of both?
- How should the limited facilities and benefits provided be handled in the revenue mechanism?
- How will the revenue mechanism address disruptions and congestion?
- How will the revenue mechanism address the RCA requirements of nondiscriminatory, just and reasonable rates?
- How often will RTO rates need to be updated?

RCA Letter of June 30, 2015 to Legislature. https://www.akleg.gov/basis/get_documents.asp?session=31&docid=36931

The Brief History of Mandatory Reliability Standards. Troutman & Locke. https://www.troutman.com/insights/the-brief-history-of-mandatory-reliability-standards.html

US Dept. Energy. “How it Works: The Role of a Balancing Authority” https://www.energy.gov/sites/default/files/2023-08/Balancing%2520Authority%2520Backgrounder_2022-Formatted_041723_508.pdf

> “There are more than 60 balancing authorities in the U.S., and they are typically either utilities, Power Marketing Administrations (PMAs), or a group of utilities that have formed regional entities called regional transmission organizations (RTOs) and independent system operators (ISOs)”

Comment: In The Balance: Introduction to the Balancing Mechanism https://auroraer.com/insight/comment-in-the-balance-introduction-to-the-balancing-mechanism/

> British perspective on Load Balancing Area and Load Balancing Authority

Congressional Research Service, 2006. Energy Policy Act of 2005: Summary and Analysis of Enacted Provisions. https://www.everycrsreport.com/reports/RL33302.html

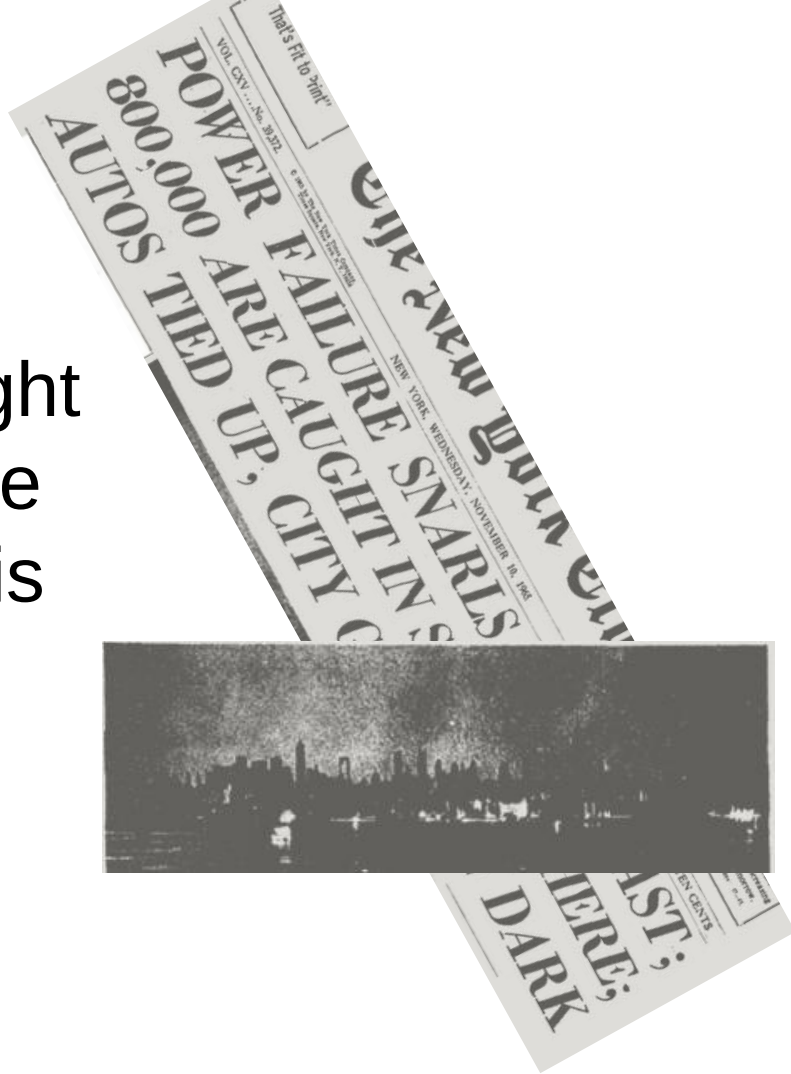
> “The Federal Energy Regulatory Commission (FERC) is authorized to certify a national electric reliability organization (ERO) to enforce mandatory reliability standards for the bulk-power system.”

Historical perspective

"The evolution of the electric utility industry from isolated to interconnected systems enhanced reliability and economics but brought with it mutual dependence—a problem on one system could affect neighboring systems. This drove the need for careful cooperation and strong coordination in system operations and common Reliability Standards."

(Nevious, The History of NERC, p viii)

https://www.nerc.com/news/Documents/NERCHistoryBook.pdf



–True for North America,

True for Alaska