REAP White Paper

On the Need for an

Independent System Operator in Alaska's Railbelt Region

At a Glance: What REAP Would Like to See

A non-profit, Railbelt-wide system operator that includes a variety of stakeholders on its governing board and is charged by the RCA to:

1) **Perform Railbelt-wide integrated resource planning for generation and transmission;**
2) **Perform Railbelt-wide economic dispatch;**
3) **Develop and enforce Railbelt-wide reliability standards;**
4) **Ensure non-discriminatory open access to the grid by all qualified independent power producers;**
5) **Develop rules to calculate the fair cost of integrating renewable energy into the grid;**
6) **Develop a universal transmission tariff for the Railbelt grid;**
7) **Follow protocols and regulations that the RCA sets, including regulations governing the calculation of utility avoided cost and;**
8) **Be regulated by the RCA.**

What is an Independent System Operator (ISO)?

Independent System Operators (ISOs) are common, if not required, in other regions of the country. System operators are typically non-profit, non-asset owning entities that oversee generation and transmission planning for a region, and set protocols for competition within the system. System operators also create the opportunity to combine loads in a region and assert operational control over generation assets to assure merit-order, "economic dispatch" of electricity across a region. This type of region-wide dispatch turns on generators in an order relative to their thermal efficiencies, location and fuel price at any given movement. Merit order dispatch assures the lowest cost for consumers. Most system operators in the Lower 48 are governed by a board that is independent from the utilities in the system.

A system operator for the Railbelt, as REAP envisions it, would also be independently governed by a variety of stakeholders appointed by the Regulatory Commission of Alaska (RCA). The system operator would have a legal relationship with the RCA called a "regulatory compact" that gives it authority to plan future generation and transmission for the region. That planning would consider a variety of factors including anticipated future load growth, energy efficiency, renewable energy, fuel supply and obligations imposed by the Commission or state legislature. Before generation and transmission planned by the system operator could be built, it would have to be approved by the RCA.

A system operator in the Railbelt would combine loads across the region and have operational control over all generating capacity to execute economic dispatch, thus creating a larger "balancing area" for supply and demand in the region. A larger balancing area for the Railbelt would more easily allow the integration of non-baseload renewable energy such as wind and solar that sends electrons into the system on a non-predictable, or variable, basis. The more places those electrons have to go at any given moment, the more likely that can be used efficiently by the grid.

The system operator would also set policy for Railbelt operations, including reliability standards. The system operator would ensure non-discriminatory open access to the grid by all qualified independent power producers. This would include setting rules to calculate the fair cost of integrating renewable energy into the grid. It would also include developing a universal transmission tariff that eliminates the current system of stacking transmission tariffs one on top of the other. The system operator would follow protocols and regulations that the RCA sets, including regulations governing the calculation of utility avoided cost. However, system operator board members would not run the day-to-day operations of the generation (or transmission) system. While the legislature creates laws for all Alaska citizens across a wide breadth of issues and those laws are carried out by trained professionals in the executive branch, similarly the system operator would create rules for the benefit of all Railbelt ratepayers, but the operation of the grid would be carried out by trained utility professionals.

Decisions by the system operator could be appealed to the RCA. The entity could be paid for by Regulatory Cost Charges (RCCs).

While system operators in the Lower 48 often set complicated protocols for things such as day-ahead purchasing, REAP does not believe that the isolated nature of the Railbelt would require those type of protocols.

A system operator is not the same as a transmission company, sometimes referred to as a "Transco." A Transco is a transmission-only utility, and is typically a for-profit entity. A Transco for the Railbelt is currently being considered. It would combine the transmission assets currently owned by the utilities and the State of Alaska. A Transco would be responsible for operating and maintaining those transmission assets, and for building transmission upgrades that serve the entire region as a whole. Under the future system that REAP envisions, new transmission would be planned by the system operator, approved the RCA, and built, maintained and owned by the Transco.

If utilities are to be on the governing board of a system operator for the Railbelt, REAP believes that the formation of such an entity should be facilitated by a neutral, third party with experience in utility matters and/or complex negotiations. Such a process could be initiated by Governor's office, the RCA or some other agreed upon entity, and should be voluntary and collaborative in nature. Given the pace of the formation of a Transco entity, REAP believes it is imperative to facilitate the formation of the ISO to ensure it is formed in a time frame prior to, or concurrent with, a Transco.

If such a system operator is established, REAP believes that in Year 1, the governing board of a system operator should be composed of a board of no fewer than 15 member appointed by the Regulatory Commission of Alaska, with a balanced representation of stakeholders representing the following interests that provides no more than 40% from any one interest group or sector:

(6) Railbelt utilities
(2) Independent Power Producers
(3) Consumers interests representing the following sectors:
    Industrial
    Commercial
    Residential
(2) At-large members;
(1) Member with tax/finance expertise and;
(1) Local government representative.
(2) Two non-voting ex officio directors representing the RCA and a Transco

REAP believes that directors should have applied experience, demonstrated competence or expert understanding in their relevant fields, and be paid through the RCA's Regulatory Cost Charge, or some other mechanism determined by the RCA.

If such a 15-member governing board for a system operator is formed, REAP believes that there must be an understood commitment by all stakeholders to achieve greater governing board independence by Year 5, with a 9-member board at that time composed of the following interests:

(2) Railbelt utilities;
(1) Independent Power Producers;
(2) Consumer interests;
(2) At-large members;
(1) Member with tax/finance expertise and;
(1) Local government representative.
(2) non-voting ex officio members representing the RCA and a Transco.

Why **does the Railbelt need an Independent System Operator (ISO)?**

An ISO would provide an opportunity to bring all six Railbelt utilities and other stakeholders together on a regional basis to plan for the region's energy future. This organization would represent the interests of ratepayers from the entire Railbelt region, something that each individual utility could not be expected to do, since their fiduciary duty extends only to the ratepayers in their respective region.

Why do we need to bring together stakeholders together on a regional scale to plan the Railbelt's energy future?

When the six individual Railbelt utilities were established, the highway, transmission and Internet infrastructure we have today did not exist. Consistent with the relative isolation of the utilities 70 years ago, the bylaws of the respective utilities were all focused inward on local respective service areas. At the time, the relatively small populations in each utility district also supported management that was held accountable by locally elected owner-board members. Over time, the operations of the utilities have grown closer, with transmission and road networks built by the state, and the utilities. While bi-lateral agreements to sell and share power between utilities have been created, there is no single entity overseeing the entire system to balance generation and transmission needs over the entire region.

In recent years, this local focus of the utilities has arguably delivered more generation capacity than the region needs, while at the same time building less transmission than we may need. The current system of each individual utility making generation decisions has also been supported by the lack of any required pre-approval by the RCA. This has resulted in about 90% of the current Railbelt generation capacity being dependent on natural gas. This dependence is a liability for the region – both because the generation mix is not diversified, and because gas suppliers in Cook Inlet have a virtual monopoly. Roughly 90% of the region's gas production comes from just one production company and much of the gas necessary to run newly built generation has not been contracted for past 2023. Both facts make Railbelt consumers particularly vulnerable to future price shocks.

The Railbelt still has few regional market rules. The lack of regional planning and RCA input into generation and transmission capacity additions is one issue that must be addressed. Other issues that need resolution to establish a highly functioning Railbelt regional electricity market include non-discriminatory open access to the grid, transmission tariffs and integration charges that treat electrons equally across the grid and consistent and transparent avoided cost calculations that provide reliable price signals for independent renewable power producers to compete against.

A single system operator with a governance structure that includes the utilities, as well as members that represent the interests of residential, commercial and industrial consumers, renewable energy advocates, independent power producers, the conservation community and regulatory agents would provide meaningful involvement and diverse perspectives that help the region optimize future generation and transmission decisions, benefit ratepayers across the entire Railbelt, and create a more efficient, single electricity market for the region.

Why does the Railbelt need an efficient, single regional electricity market?

The world is becoming a more competitive place every day. Change is accelerating rapidly, from technology to global trade routes to geopolitical tensions that have impacts

on world energy markets. Alaska is also in a state of flux. We are moving out of an era when for more than 35 years the state was able to pay for virtually all of its operations and capital improvements with oil revenues. Alaska is now facing the question of how to operate and build-out infrastructure for a state larger than most nations on earth, with less than 750,000 people to pay for it. Economies of scale and efficiency are going to be very important for Alaska if the state is going to be competitive in either national or international markets.

Economic efficiency requires a cohesive regional strategy. One important tool for achieving lower electricity costs is to reduce the use of fossil fuel in the generation process. Large, new capital expenditures have already been made by the respective utilities, and Railbelt consumers already have the burden of paying for those investments. To keep electric rates as low as possible, and keep Alaska a competitive place to do business for both current and future businesses, decreasing the region's use of natural gas is a key factor that both the RCA and the utilities have recently been highlighting. Saving fuel can be accomplished by merit-order, economic dispatch of electricity in the region. This type of region-wide dispatch would turn on generators in an order relative to their thermal efficiencies (and location and fuel price).

The three Anchorage-serving electric utilities recently entered into a voluntary agreement to form a "tight power pool" to accomplish economic dispatch among the three of them. Although that agreement provides a contractual framework for those three utilities to make their generation and transmission resources available for power pooling, detailed processes, protocols and procedures remain unknown, including the process for non-discriminatory integration of renewable energy generated by independent power producers. Furthermore, there is still no economic dispatch for the entire Railbelt region, a handicap when one of the ostensible goals of the region is to save fuel, keep rates as low as possible and keep more money in the Alaskan economy. A single system operator could perform economic dispatch for the region that benefits both utilities and their ratepayers.

An efficient electric market would also keep money in the state's economy by weeding out generation and transmission projects that are either too expensive to be paid for by the relatively small number of consumers in the region, or ill-suited for environmental or social reasons. When ample state assistance was available, utility decisions to pursue projects have not always made with bottom line economics in mind, or by a wide range of stakeholders. The Railbelt's current process has also demonstrated resistance to integrating renewable energy resources into the system. Examples include wind farms at both Delta Junction and Fire Island that have been struggling to expand due to the lack of unified integration resources, lack of interconnection protocols and lack of regulatory enforcement. A system operator could provide a single point of entry, pricing and access parameters for parties interested in selling power into the Railbelt market.

We can reasonably expect that a diversified board of governance for a new system operator would help the Railbelt better meet future challenges. We need regional perspective on transmission, system-operations, infrastructure expansion and

maintenance. There are a number of diverse perspectives that would help shine light on these issues as well as future Railbelt planning, including knowledge of renewable energy technologies that are improving rapidly and have already reached price parity with natural gas and coal in a growing number of American markets. Outside stakeholders can also advise on innovations such as electric transportation and storage. We could also expect a single system operator to have a regional approach and perspective that would result in the development of Railbelt-wide market rules for incorporating renewable energy sources into the grid that would be consistent across the region, facilitating a more rapid incorporation of renewable energy sources into the Railbelt grid.

> ***Why* is it important to more rapidly facilitate the incorporation of renewable energy resources into the Railbelt grid?**

As we've seen with the Bradley Lake hydro project, incorporation of clean renewable energy resources allows us to lock in stable, predictable pricing. The Railbelt region is rich with renewable energy resources, including wind, solar, geothermal and, in the future when the technology becomes more fully mature, tidal energy. Wind power purchase agreements with known, long-term pricing can extend for decades. Both hydro and non-hydro sources of renewable energy save fuel, an important consideration since the region is highly dependent on natural gas supplied by one company in Cook Inlet. This heavy reliance on a single supplier means Railbelt utilities have no ability to meaningfully diversify the source of supply and are highly susceptible to price fluctuations. Businesses around the world are also eager to embrace and invest in communities that support future-oriented clean, renewable energy. In fact, many energy-intensive tech businesses such as Apple, Microsoft, Google, Amazon, and Facebook require the procurement of renewable energy as a pre-condition to investing in a particular area. Without an assurance that the Railbelt will soon generate more renewable energy, the ability to attract many corporations to the state will be foreclosed.

In addition, it is reasonable to expect some kind of carbon tax or other regulation in our future. Getting ahead of that inevitability will mitigate the region's vulnerability to sudden price spikes attributable to future carbon regulation.

Aside from procuring fixed-priced power and mitigating a future carbon tax, it's also important that Alaskans do what we can to lower our collective carbon footprint and respond to climate change now.

> ***Why* is it important that we better incorporate renewable energy sources in response to climate change now?**

It is a scientific fact that greenhouse gas emissions by humans are a major cause of the climate changes that we are now seeing. Scientists are also confident that climate change will mean continued volatility in the weather that will have impacts on worldwide food and transportation systems that we rely on in Alaska. More and longer droughts, bigger and more frequent floods and other large storm events, coastal zone inundations and other ecological disruptions are all likely consequences if humans do not rein in greenhouse

gas emissions. Meanwhile, Alaska is already being hit hard by climate changes that will likely cost Alaskans billions of dollars to adapt to.

Conclusion

Alaska needs to be ready to adapt to accelerating change. However, today Alaska still has a relatively immature electric market. If we are interested in building a strong future economy and dynamic culture, we must anticipate the future by examining today's trends. In 2016, more than 60% of all new utility-scale electric capacity in the United States was either wind or solar. In Europe, *nearly 90%* of all capacity additions in 2016 were non-hydro renewables. In contrast, there has been no new renewable generation added to the Railbelt grid since 2014. Alaska needs a single Railbelt market that can eagerly embrace the integration of renewable energy, and capture the benefits of clean, local, predictably priced electricity.

REAP believes that a single, Railbelt-wide independent market governance structure that incorporates diverse stakeholders in an equal and meaningful way will help Alaskans unwind current bottlenecks in our decision-making processes, lead to wise future long-term investments, remove barriers to incorporating renewable energy and attract investment to Alaska.