



INTERIOR GRID RESILIENCY PROJECT

Lower costs and cleaner air, upgrading the grid will get us there.



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ALLIANCE FOR REASON AND KNOWLEDGE
145 Marten Dr. Fairbanks, Alaska 99712

Submission to

US Department of Energy Electricity Industry Technology & Practice Innovation Challenge

Submission Tier: One

Title: Interior Grid Resiliency Project

Key Areas of Interest Addressed:

- Cyber and physical risk mitigation
- Operational efficiency
- Reliability and resilience
- Facilitation of emergency response and recovery
- Safety

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Video Link: To the Wild Country by John Denver

<https://youtu.be/utHRwPYtkwE>

Abstract for Interior Grid Resiliency Project

The biggest challenge, and the biggest opportunity for the US to move boldly into the 21st century is centered in how we go about upgrading our bulk power supply system aka “the grid”. Conservatives and liberals agree the transition must happen, but no one can agree on what technologies to use, what system of management to use and most importantly, where a nation trillions of dollars in debt can ever hope to come up with the money to pay for the infrastructure.

Every day the debates rage, people suffer and the situation with the planet gets worse. Most experts agree we as a nation have 10-years to radically shift our behavior before the impacts of industrial activities over the last century send the mechanisms of climate and weather regulation into chaos. Reporting from the arctic, which is arguably the front line in the climate war, we have passed the point of no return and resiliency is the key to abundance in this brave new world. For the nations’ bulk power supply, the simple solution is to move away from vulnerable industrial scale centralized generation and complex distribution systems to a nationwide network of independent nodes, nano-grids, microgrids and individual small power producers utilizing the philosophy of Net Zero Energy retrofits for existing buildings and standards for new construction.

The safest way to maximize operational efficiency, reduce the threat of cyber and physical risks, facilitate emergency response, maintain reliability of service and resiliency to the bulk power supply system in a rapidly changing climate is to focus on the financing. This is one mechanism that allows for individual properties to overcome the hurdle of the capital investment into stand-alone power systems. A multitude of off the shelf technologies exist to conserve, generate and store energy as needed to meet almost every demand. Even at the industrial level, companies like Toyota have designed and built factories that make the power they use in production. Many island nations have or are switching to stand alone power systems using 100% renewable energy and the list grows every day.

In landmass, Alaska may be nearly 2/3 of the size of the US but the population in total is less than most major cities. Furthermore, these robust people live in small isolated communities in some of the harshest conditions on Earth. Even the two major cities, Fairbanks (pop. 97,121) and Anchorage (pop. 401,108)¹, don’t hold a candle to most modern urban centers. In many ways these conditions have been major obstacles to growth. Now, however, those same challenges provide the opportunity for Alaska to be a proof of concept of how smart cities are designed, built and sustained within the ecological carrying capacity of the region. This innovation provides a long overdue upgrade to land use planning and a natural laboratory for the aerospace industry to examine and perfect colonies for deep space. Ironically, learning how to sustain life on other planets is the key to learning how to sustain human life on this one. Again, all this depends on how we go about upgrading our grid.

We are confident of the success of this winning entry because the technology in place now for the interior grid is six centralized coal fired plants, the bane of climate resilience; the technology of coal and practice of centralized power should be changed not just because of the health impacts to the planet but the crippling economic impacts fuel extraction, consumption and disposal have on the cost of doing business on a living planet. The cost of which mainstream Keynesian economics conveniently externalizes. Empowering end users to finance renovations that include a combination of technologies

¹ <http://live.laborstats.alaska.gov/pop/>

and building strategies provide conservation, generation and options for excess. We can virtually link these together as a distributed energy matrix that will clean up the air, lower the cost and affect everything in the economy impacted by energy.

The technical merit of this approach has been proven reliable on all scales around the world. At an increasing pace over the last decade the viability is proven in the increasing number of institutes that are financing individual solar and efficiency upgrades as modified home improvement loans. In Alaska the island of Kodiak is powered by 99% wind and many resorts and remote cabins operate as stand-alone power systems. There are roughly 220 rural villages throughout Alaska, most stand-alone with a few small grids for clustered communities.

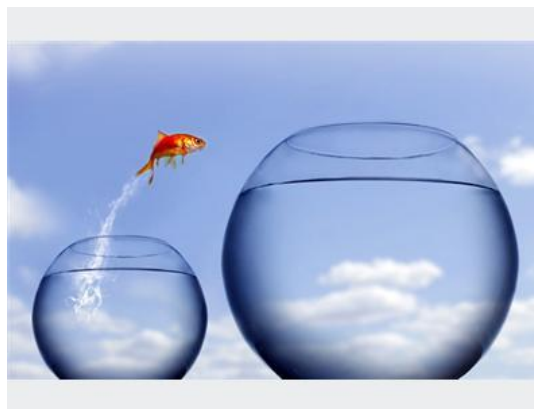
Even the second largest city in Alaska, Fairbanks, could be viewed as having three isolated and Net Zero Energy systems on both military bases and at the University of Alaska Fairbanks. Even with coal-fired power plants, these systems provide resilient redundancy for the other three plants that feeds the bulk of the 48,000 individual meters connected through the local co-op utility, Golden Valley Electric Association (GVEA). Finally, the infrastructure for electric cars, that is driving the demand for upgrades to the grid in most places, is already here since most businesses provide plug-ins for block and battery heaters, representing a mature potential to implement the project.

The auto industry exploded when the financing was put in place to overcome the upfront cost of the purchase. The innovation of financing Net Zero Energy retrofits for individuals is the simple approach. It is an approach that brings aggregated cost savings and increased incentives that further bring down the total installed cost of the system (which could exceed 65%). Combining this innovation of process with the novel idea of using the avoided cost of power to pay for the equipment means even the most economically challenged people can afford to make the leap. This would eliminate the cost of energy and facilitate the transformation for many people who pay over \$1000/month for electricity. As many villages in Alaska pay the equivalent of \$1 or more/kWh of electricity, the potential magnitude of impact would be tremendous. This project is a bold move forward that would reduce the cost of living and improve the quality of life for everyone.

Narrative for Interior Grid Resiliency Project

Introduction

While it was critical to the industrial revolution, centralized energy generation systems (like the six coal plants now providing the bulk power supply for the Fairbanks North Star Borough) are antiquated concepts. It has become a matrix of control that leaves the community vulnerable to disruption, an impediment to economic growth and a major health issue to the People of the region. Decentralized nano-grids utilize the core principle of onsite generation and can serve as the foundation for a modernization of the interior electrical grid. This solution is becoming the norm as a multitude of technologies exist to create Net Zero Energy retrofits. A turnkey operation funded with private equity capital will deliver the profits of avoided cost, cleaner air and a positive return for investors. This is our endgame for climate resilience and our plan to leap forward to achieve economic, environmental and social justice for generations to come.



For over a decade, professionals and industry experts, (not funded by dinosaurs) have attempted to appeal to common logic, common decency and simple math in pursuing a renewable energy agenda. This has been all to lower the cost of energy and improve the quality of life for the Planet and her People. Honest and sincere efforts have fallen on deaf ears. Profiteers blind to the human suffering and environmental degradation caused by maintaining the veil of willful ignorance that coal is cheap, coal is clean, and coal is the future of Alaska for the next 140 years. As evidence mounts to the damage they lawyer up and double down on the rhetoric. It is this type of tyrannical behavior (largely from the co-op utility) that makes many locals feel like they are living out a performance of George Orwell's book "1984".

For the last decade corporate interests have corrupted the local government and usurped advocacy efforts to the point, that the horrors of coal are a taboo subject. The flow of information is controlled so the conversation about everything but coal, eats up all the bandwidth and the truth about the benefits of renewables are kept from a willing and eager public. Therefore, we developed this specific innovative approach of upgrading our bulk power supply by leaping right over the regulations of interconnection and the false economic theories of a co-op utility that has become monopolized for private profit of a few at the cost of many.

We are grateful to the DOE for putting this competition together because it serves as a framework to map out the path forward for the People and a rally point for the community. The information it contains may be shared with private equity investors who are willing to turnkey the project on identification of property owner commitment, which is now possible with this rally point. Individuals have been diligently negotiating deals to truck in propane to balance out the wind produced in state as part of the solution for geographically dispersed energy consumers where natural gas pipelines are simply uneconomical. All the pieces are together, and the timing is right for Alaska to leap

forward. Regardless of whether we win the actual prize, or not, we recognize the victory in having a plan to be free from the oppression and criminal behavior made legal by lobbyist.

The Challenge We Acknowledge

At -50 Fahrenheit, on a dark cold winter night, energy can mean the difference between life and death for any Alaskan. In general, energy is the lifeblood of the modern world and avoiding disruption of services, at least in the first world nations and has trumped concerns for the environmental degradation or human suffering caused by the current system. In running the numbers, this system externalizes the cost of production for decades. Those costs have stacked up and we are now paying them as seen in the increasingly chaotic weather patterns resulting in devastating property damage and loss of life beyond measure. Alaska is on the frontline of a rapidly changing planet and if experts agree the world has roughly 10 years to adapt, the polar regions have 5.

For the last decade, professionals, concerned citizens, and environmental groups have written, lobbied and campaigned for change which has largely fallen on deaf ears. Every few years there are elections and the people in office change, but the policies never do. Even in 2019 the state government protects the extraction industry while regulating the citizens of the state to pick up the social, economic and environmental bill. The quality of life for Alaskans is at an all time low while the stock reports say profits are at an all-time high. The challenge we acknowledge, is that once a needed commodity, coal as source of power generation, is not the best use of the resource or one of the best practices we can utilize today. Coal as carbon nanotubes are far more profitable and can pull CO₂ from the air². The fact is we have become addicted. By admitting we have a problem the solution also becomes clear- we must work a recovery plan.



In all the vastness of Alaska, the Interior host six coal-fired power plants that collectively produce 135Mw of electricity annually. In 2011, the group, Alaska Community on Toxics, published a report on coal ash in the Interior of Alaska³. To be clear, this source pollutant it not coming from the smokestacks but is spread in open box cars traveling through the center of town. It is the processed ash after it has been burned that has for years been dumped in unlined pits, some near

the largest wildlife refuge in Fairbanks, Creamers Field. The horrifying results of the study are only trumped by the reality that no action has been taken to correct the issue, it is a taboo subject of discussion and the ones in charge of regulations are the offenders themselves. Propaganda has led to the ash being used as fill dirt for construction projects and UAF promoted it for a time as suitable for gardening. The entire mentality that finds this acceptable **IS** the challenge.

In 2018 the American Lung Association announced Fairbanks, Alaska to be the most polluted city in the US⁴. That same year borough residence passed a resolution to prevent the local municipality from

² <https://phys.org/news/2016-06-power-co2-emissions-carbon-nanotubes.html>

³ https://www.akaction.org/wp-content/uploads/2013/03/Coal_Ash_in_Alaska_Feb_2011.pdf

⁴ <https://www.lung.org/local-content/content-items/about-us/media/press-releases/fairbanks-ranks-as.html>

further management of the air quality program as their primary focus was people burning wet wood, while completely ignoring the issues with the coal-fired plants.

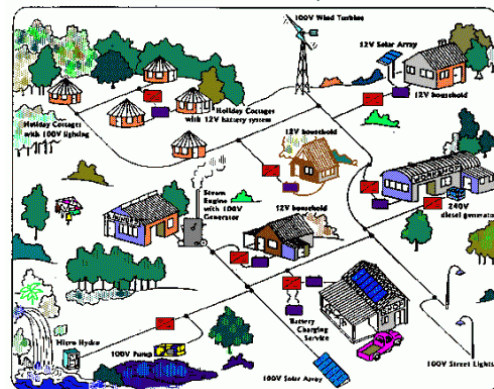
The ideal approach would be for the municipalities, utilities and regulatory agencies to issue a statement of intent to seek P3 (public-private partnerships) with organizations capable of rebuilding our entire electrical grid, which compared to, say LA, is rudimentary at best. However, obstinance has made it necessary to seek alternative routes to meeting the needs of the Planet and her people. The P5 approach is being introduced as the solution to outdated behavior that has become destructive. People Promoting a Public-Private Partnership (P5) is the reason for a focus on the DOE competition as a rally point. It simply frames the complicated conversation of upgrading the grid into simple concepts for busy people. With innovative financing to overcome the economic barriers and circumventing political obstacles, we can meet the needs of the People with an endgame solution for providing clean air and affordable energy in a timely manner. This is the solid bedrock on which to build a thriving and sustainable civilization.

The Solution We Envision

Just like the parts in a car, the bulk electrical power supply of our grid is made up of thousands of connections all working best practices to ensure safety, reliability and affordability as we speed along into the future. As referenced in the EITPIC guidelines, the grid in most places is over 100 years old and built in a patchwork to meet the changing needs of a growing civilization.

In this case there are new practices, policies, procedures and technologies that are now the best practices to meet the needs of the Planet and her people. Specifically, a focus on bulk financing changes the values for the cost of individual systems and 100 units is typically a tipping point. In Alaska, approximately 48,000 jaded GVEA customers and roughly 220 remote communities with rudimentary systems provide the greatest opportunity for creating jobs and local living economies as we demonstrate to the world what a people unplugged from the past can accomplish.

Few things last 100 years, and in our society, 20 years is an accomplishment of endurance for anything. In discussing upgrading the grid, we are not talking about the technology but about the frame of mind that believes centralized power distributed to individual meters is the best practice. A practice that confuses the “wants” of the people (energy as a commodity) instead of recognizing the intrinsic “need” to have access to clean affordable energy for even the most vulnerable of our citizens. Below are several examples of net-zero stand-alone power systems in the Fairbanks area. They provide evidence the technology is not the challenge to address in working to achieve the goal of mass adoption of renewables and the transition of the worlds’ bulk power supply systems.



Net-zero in Fairbanks

King on the Hill- A former mayor built a net zero home utilizing a combination of small wind, solar and biomass heating to provide heat and power even at -50. This home has been a showcase and staple on the Fairbanks Solar Tour for over a decade.

Passive House- An international green builder constructed the first net zero model home in Fairbanks to utilize solar thermal heating, solar mass heating, solar PV along with extensive conservation to lock in the cost of energy for the next 20 years.

Mars Residence- A former UAF researcher and his wife modified a traditional house, to the tune of \$130k, so they could achieve Net Zero Energy standards; including a methane digester converting waste into heat and syphoning off the CO2 to feed the banana tree and other plants growing in his garage.

CCHRC- The Cold Climate Housing Research Center is a showcase of modern technology and the hub of building design for the arctic. People and professionals from around the world come to learn of cutting edge technologies and participate in remote community demonstration projects. Local builders also find CCHRC a valuable resource to building in the arctic.

Stand Alone Power- Large numbers of homesteaders in Alaska are beyond the reach of the grid. For most, Net Zero Energy is the simple reality of stand-alone power. Energy is a part of modern life and even in the most remote parts of the state people are innovatively finding new ways to meet their needs, becoming resilient regardless of changes in the weather.

UAF and the Military- Although powered by coal, each has the potential to be stand-alone power systems and reflects the over 200 remote villages around the state that have a similar situation using imported diesel instead of local renewables. Both have an impetus to incorporate more clean energy and make the transition but lack a clear understanding of where the financial resources come from to make the switch.

Leaping over the technical discussion does not imply that the technical components included in each system are not important. Indeed, every nut, bolt, and screw come together to create something that is more than just the sum of its parts. The point here, and the winning solution of this submission, is simply to acknowledge that the focus on how systems perform technologically, is secondary to how the system performs economically. The rate of technological development has made it possible for almost every building to stand on its own power and the key to unlocking the mass adoption of these technologies is to make it affordable for all.

The plan with the Interior Grid Resiliency Project is to upgrade the bulk power supply by creating private and public partnerships that can leverage all the benefits of community to overcome the challenges of doing things on our own. Even without sharing a watt, we can all stand together by sharing the burden of cost to make a bulk purchase and do it in a way to trigger the incentives. Below is a simplified step-by-step description of how this plan will create an upgrade to the current energy matrix without raising cost on individual property owners.

- 1) Property owner sign up (available if they have none or some equipment)

- 2) In batches of 100 units, private equity investors (PEI) release funds to the energy management service company (EMS)
- 3) EMS enters into a power purchase agreement with property owner to dedicate avoided cost funds toward repayment of equipment.
- 4) EMS installs system containing equipment they own for tax purposes.
- 5) 5 years later, max, the equipment paid for is transferred to property and then the owner assumes responsibility for O&M or contract the work to a professional firm.
- 6) Jobs are created in the community; property own electricity costs stay at zero; PEI receives 20% ROI
- 7) Residential properties with no viable onsite renewables provide options for propane generators and new construction of this type is discouraged.

Mapping the Future

The DOE Grid resiliency competition has provided the opportunity to examine the current structure of the grid for the Interior and demonstrates the path to upgrade the whole system. The economics favor financing the deployment of individual Net Zero Energy solutions and then building a distributed grid system to support those few who cannot support themselves. Decentralized power meets the requirements of the competition and more importantly the needs of the People. The co-op utility will evolve to serve our collective will.

Technical Merit and Viability

The scope of this project is the collective development of 200 MW of generation capacity utilizing distributed energy resources with multiple back-up options for individual properties. The goal is to provide proper financing packages so roughly 80% of the building inventory in the region (accounting for all building types) can operate as a solely independent Net Zero Energy facility. This is a long-term low risk investment that can be profitable to financial institutes, municipalities and builders alike⁵. This also reshapes the distribution needs of those roughly 20% who we will not leave in the cold or dark.

Potential to Mature and Implement

Our limited centralized infrastructure and geographically remote communities generally favor distributed energy systems, nanogrids, and those connected in regional microgrids. Clusters of Net Zero Energy neighborhoods can supplement those who cannot stand on their own with a new system of transmission that is resilient, reliable and affordable to all. The O&M can be provided under a common stock ownership agreement with revenue invested back into the community. The goal is to solidify a regional plan and the financing mechanisms that will allow for full utilization of the production tax credits by the end of 2019. Once established, the project will roll out over the next 3 years, or as supplies allow.

Innovation and Transformation

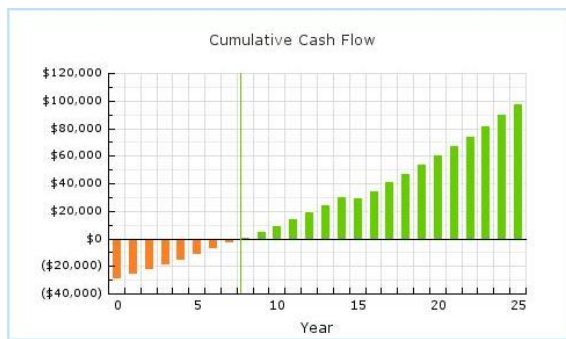
⁵ <https://www.sbcmag.info/news/2018/may/net-zero-project-reveals-value-energy-efficiency-developer>

The innovation of this submission is focused on leaping over the circular conversation of technology by using the Net Zero Energy design model to draw attention to addressing the economic barrier of the initial individual investments. How those individual accounts are aggregated in a bulk financial partnership and how connecting the avoided cost of power directly into the repayment of the equipment, providing a positive return to private equity investors, is what makes this innovative approach an award-winning solution. This project demonstrates the value of P3 partnerships as the market-driven solution to upgrade the nations' bulk energy system one city, one community, one home at a time.

Potential magnitude of Impact

A full decade before other states were even talking about it, Vermont was making the transition to 100% renewables happen. They rallied, they marched, they made a day of it and made a movie about the experience. We can accomplish this too, with the same result of using best practices and best technologies to meet a fundamental need of all People; affordable access to clean reliable heating, electricity and transportation energy.

Financial Snapshot



Avoided cost financing works for energy investments because capitalizing the initial equipment generates a revenue in avoided future energy costs. Once the equipment is paid for all future energy fuel costs remain fixed at zero. More importantly, these values increase over time. In total, a 200 MW project, consisting of around 50,000 individual accounts, is estimated to cost nearly \$2B. Implemented in 2019 the investment opportunity is 3-5 years with a 20%

ROI for private equity partners. The \$100K grand prize would be allocated to hiring a resilient city manager to organize the scoping study and program roll out.

A local contractor shared they have done everything they can on their own to bring individual system paybacks down to \$0.167/kw. To reach the sweet spot that would accelerate the rate of mass adoption and propel the state into the 21st century they need to reach \$0.118/kw. Aggregating the costs for individual systems can make it affordable if financed on a district scale. Using the avoided costs model to recapture the equipment price can further bring down the investment that drives up the adoption rate by enabling the most economically vulnerable citizens to participate in the retrofit program.

The main driving economic force behind the timing of this effort is the December 2019 deadline of the Federal Implementation Plan. Industry leaders have proposed natural gas and propane solutions and even bringing on more wind and solar, but the utilities remain resolute that no technical solutions are cheaper, more reliable and safer than clean coal. As a result, unless another plan is put forth, the utilities will likely have to raise prices that may go beyond \$0.30/kWh. Getting even 1 of the 100 pioneer projects connected to a 200 MW grid resiliency project prior to this time may lock in the 30% federal ITC for the estimated \$2 billion project. Given the rural and economically challenged status of

Alaska, such a bold move could qualify for an additional 35% New Market Tax Credit. This is a move that would only serve to improve the financial picture for everyone involved.

Impact on the budget and economy

YES Magazine calls this the “Renewables Revolution”. In a 2017 article⁶ they spell out in black and white why the future is here and there is no going back by making four simple points. One: states that cut carbon emissions are prospering. Between 2000-2004, 33 states cut carbon emissions by an average of 12% while simultaneously growing the GDP by 22%. Two: coal is not coming back. Between 2012- 2017 US coal production dropped by 25% and in the same time employment in the coal industry dropped 45%. Third, the development of renewable energies are outpacing fossil fuels with an expected increase of over 200% by 2050. The fourth reason listed is that switching to clean energy makes economic sense. In most places, including the US, solar is cheaper than coal, with the cost of solar dropping 75% since 2009 and expected to fall another 66% by 2040. Renewables are simply the smartest investment with \$144 billion available creating 1.92 million jobs by 2030.

Impact on the State

In another article from that same issue, “Transition to Renewables is Hard-and Easy” the author travels around Alaska to see the emergence of a transition in effect and the long-term impacts on short-sighted planning. Colonial behavior that has nearly wiped out the cultural identity of indigenous people who lived here for 10,000 years in balance with Nature and now is causing a mass exodus of families out of the state.

Drilling the first oil well in 1902, Alaska has long been an oil state. In 1988 the oil flowed at nearly 2 million barrels every single day. Known by locals as the “pipeline days”, this money built the infrastructure of what Fairbanks is today. But now the oil wells are drying up and 85% of the State’s revenue along with it. This leaves the people of Alaska with a \$3.7 billion bill. Those same companies who made trillions in privatizing the wilderness are skipping out on the check. As one advocate states “the oil companies are not committed to the state and the Native people are paying the price.”

The Renewable Energy Alaska Project (REAP) estimates efficiency and renewable energy projects across the state saved 22 million barrels of diesel, valued at nearly \$61 million, in 2015 alone. With the technology available in 2019, and treating the individual financing of 1000’s of individual nanogrids as one investment portfolio project, the state of Alaska could be fossil free in 5 years and that \$61 million could rebuild our schools and communities, invest in the education of the next generation and open Alaska to environmentally friendly tech and tourism industries to fill the void left by big oil and the sunset of the extraction economy in Alaska.

Providing the financing mechanisms that would allow each community, regardless of size, to sustainably provide for their own energy needs by generating it close to home is a game changing solution. It may be a drop in the bucket on the national scale and in the efforts to mitigate climate

⁶Why Not Even Trump Can Stop the Renewables Revolution. Yes Magazine, Fall 2017

change, but to many rural Alaskans who pay \$1000 or more per month for electricity, eliminating the bondage of continued dependence on central control of critical resources is the only path left to maintain some connection to the land they call home.

Team

The greatest resource this state can invest in is inspired, educated and supported People. Innovations such as the Trans-Alaskan pipeline and ingenuity to extract resources from some of the harshest climates on Earth are not feats of engineering but triumphs of the human spirit. As an educational organization, ARK is inspired to find innovative ways to educate, empower, and enrich the People. The simple terms to capture these concepts are job training and stimulating diverse economic development. Creating opportunities for individuals to learn how to “fish” (career development based on individual goals, skills and abilities) is a permanent solution to achieving high metrics of human happiness, environmental stewardship and economic stability since “perpetual growth” is a myth of suberabundance promoted by Profiteers.



Within individual industries, local businesses form a community and to that community we are inviting local professionals, educators, investors, and company representatives to join the Alaska Business Partnership (ABP). A limited partnership opportunity we are working to legally organizing as a professional organization that will enable us to serve as the energy management service company to turnkey the solution and unlock resources to address some of the core challenges facing Alaska. This will eventually become one side of the equation of a P3 collaboration with municipal, state and federal agencies as the elected managers of Public resources. This is a viable solution that trains people to earn living wages to build the Alaska families 140 years from now will still call home as a good place to raise a family.

The scope of the ABP is to function for 10 years as Alaska becomes the “proof of concept” of how the world can use physics, free-will, and market forces to draw private equity investors to help build the world of tomorrow (as defined by the People of Alaska for Alaska’s sovereign future). The scope of the ABP is to invest in developments that support the mission of the organization and once the capital equipment is paid for, the assets can (as an option) be transferred to agencies, established under similar guidelines as the Green Bay Packers common stock ownership model. This will provide long-term O&M, while ensuring the profits are continuously reinvested back into the community’s’ health and long-term viability.

Crisis is the opportunity to make change. For too long the People have waited on elected officials, supported by business interest in pursuit of an economic agenda that puts the greed of profit before the needs of the Planet or her People. Eco-capitalism describes those professionals who see profit in a healthy planet and are willing to invest in generational prosperity. Calling on them to join us in realizing our plan for Alaska, our dream for America and our hope for the world is how together we leap forward as an enlightened planetary civilization.

Action Plan

The practical function of the DOE competition, for Fairbanks, is to create a rally point for the community and a means by which we can map out a path forward to achieve the actual goal of upgrading our current energy operating system. In doing so we can work together to unlock the state's economic potential to thrive in symbiotic harmony with the wild natural world that makes this state a great place to raise a family.

As the cost of energy is the venturi point for the state's economy, removing the barrier to energy diversity is the highest priority. The avoided energy costs can pay for the equipment and eliminating that line item from the budget can fund the rest of the transition to create jobs and literally build the future of Alaska. As a citizen's initiative for solutions, the Interior Grid Resiliency Project seeks to prioritize the youth, the elderly and those most vulnerable to the failings of the current system. Regardless of the outcome of the competition, we have developed three key elements of a local action plan to further develop in addition to signing more people up for individual conversions.

The Citizens Initiative for Solutions council is a pragmatic coalition of private citizens, advocacy groups, local businesses and industry professionals working to unlock Alaska's potential to thrive beyond our instate consumption of fossil fuels (separate from market production). Completing the mission to build bridges with community and national allies. To nurture in our youth, adults and seniors an achievable call to action of upgrading the grid inside the next 10 years utilizing 100% distributed clean energy sources. This is how we win.

In the land of the midnight sun, Fairbanks, the Golden Heart of Alaska, is the birthplace of this movement because the land literally is eroding beneath our homes. We are calling on national and global allies for an assist in leaping forward, past the six coal fired plants and sunsetting their current operations. A feat that will unlock the economic potential of a clean energy economy in that same timeframe. Through education and advocacy for local, state, and federal action, the collective goal is simple; locally empower Alaskans in their ability to thrive on a rapidly changing planet that shines globally on our ability to be the change we want to see in the world. The education program alone is set-up to create jobs by funding a full-time program manager that can work through three primary engagement campaigns.

1) Community Power Projects

Tell me and I hear. Show me and I see. Teach me and I will know and can teach others. This ancient idiom captures the need and the educational value of group projects as the ultimate tool of learning. Both the successes and failures of making the effort are the steps on the path to wisdom. Inside the scope of the 200MW scope we have identified 10 local projects that provide the proof of concept to expand the program beyond the initial 100 pioneer projects that kickstart it all.

The foundation for this project has evolved out of a decade long national collaboration with the American Solar Energy Association (ASES) who established the national Solar Tour. These annual events have helped to establish sponsorship relations with businesses and has been eye opening for locals who drove past solar panels for years before "seeing" them on a tour. In the

last year ASES has begun to collaborate with Solar United Neighbors (SUN) who is a facilitation group for local projects based in DC. Bringing them together to empower youth to engage in the energy transition movement, and the multitude of online resources, like Heat Spring Learning Institute⁷, will allow us to step up our game and increase the adoption rate as well as develop the labor force for this rapidly growing industry.

2) Education and Career Development

K-12 education and early career development is the generational focus of many national groups, the University of Alaska system, and ARK independently. A naturally inspiring collaboration can utilize nationally recognized accredited education tools to promote STEM. Programs that, using the internet and simple modeling tools like PV Watts, can lead groups through designing projects for their own homes and community as the best way to anchor the knowledge.

Energy is both a simple and complex topic. For busy people of all ages to understand this is the first step to be an informed energy consumer. This 7-week course will utilize a combination of education tools, i.e., speakers, worksheets, fieldtrips, films and group activities to engage, in two-hour blocks throughout the day, with small groups of adults, youth and children in the exploration of energy knowledge. Supplemented with weekly guided tours of local sites from previous solar tours and a list of resources for expanded energy knowledge, this workshop series will provide a robust and engaging feast to educate more people about how to make good energy choices, whatever “good” means to the individual.

Course Schedule by Week

- 1) Watt is energy?
- 2) Conserving energy- the “nega-watt”
- 3) Renewable energy sources
- 4) What is “the grid”?
- 5) Alternative energy solutions
- 6) Economics of net-zero stand-alone power systems
- 7) Financing a clean energy economy in today’s Market

ASM- Saturday schedule

- | | |
|-------|---------------------------|
| 8-10: | Children (sunbeams) 5-12 |
| 11-1: | Youth (sun-risers) 13- 30 |
| 2-4: | Adult (sun-setters) 30+ |

3) Policy Recommendation

As a 501c3 nonprofit, ARK does not engage in political campaigns or support candidates. The distinction of boundaries is important because systematic change requires a social, economic, technical, environmental and political component to function sustainably in the natural world. Our work in this area is focused on research and providing suggestions to elected officials on what has worked for other states that we might be able to adapt here. One prime example worth exploring is the success found in Vermont for the citizen initiative for solutions that

⁷ <https://www.heatspring.com>

became known as Vermont Energy Independence Day. Not unlike this competition (a video and written documents) this grassroots effort won the hearts and minds of the people and made history when Burlington, Vermont became the first major US city to build their future on the foundation of a clean energy economy.

Conclusion

The key to unlocking our economic potential relies on our ability to break our addiction, transition away from an oil economy and heal the infection that has corrupted our local municipalities and allowed our member owned co-op to become a coal driven monopoly. For Alaskans spread over hundreds of miles of wilderness, a central grid makes no sense. As the technology advances more and more property owners are going for Net Zero Energy solutions for the simple reason its good business. One of the sites on the 2018 Fairbanks Solar Tour was Six Robblees which is a retail outlet for custom auto parts. When the local manager was asked why they invested in solar, the answer was simple “it was a corporate decision”.

In crisis, the opportunity to leap forward becomes clear as the noise gives way to the facts: renewables not carbon fuels are the only future we can pass on to our children. 46,000 people, two major military bases and an aerospace university tied to energy produced by six coal plants in 2019 is the dictionary definition of insanity, especially when viable alternatives exist. The Interior Grid Resiliency Project is the alternative to this insanity. By enabling, through market driven finance mechanisms, the money to allow the People, for their own properties the easy solution to opt out of the craziness by investing in stand alone Net Zero Energy retrofits. Locally, Spirit of Alaska and Denali FCU both offer solar financing and those are steps in the right direction.

Alaska is on the frontline of a rapidly changing climate and on the verge of economic collapse because of decades of poor management. At the end of the pipeline, Fairbanks is extremely vulnerable and not prepared for long-term disruptions or wild fluxes in market prices. The situation is worse for all the rural villages (nearly 30% of the states’ population) for whom the cost of energy can be as much as 5 times higher than relative urban costs (for Fairbanks that is \$0.24/kWh)⁸. Many of these communities have no economic base whatsoever, relying entirely on the native corporations, the state and the federal government for assistance. One such example is the Power Cost Equalization program (paid out \$21.9M in 2016)⁹ which could, if utilized to invest in clean energy rather than continuing to prop up the dinosaur economy, transform the economic landscape for rural Alaska, protecting culture and empowering People to stand on their own. A just transition that can easily occur within the next 10 years.

The video selected, John Denver’s “To the Wild Country”, is a reminder of what we stand to lose if we don’t act decisively now to change course while we still can. The road forward is powered by clean renewable energy generated onsite whenever possible. Making the financing available to individuals is the only sure path to affordability, security and a model for others. Lower cost and cleaner air, upgrading the grid will get us there.

⁸ <http://www.alaskajournal.com/community/2008-05-18/energy-cost-equalization-program-should-cover-all-alaska>

⁹ <https://www.juneauempire.com/news/as-funding-dries-up-alaska-seeks-new-way-to-pay-for-rural-power-2/>

The choices is ours

There comes a time in everyone's life when difficult decisions must be made. These are the opportunities for growth and the point where everything can change.

The Interior is facing a difficult decision about what kind of future we are leaving for our kids and all roads lead back to the choices we make about energy.

From the cost of living to the quality of life, making smart energy choices creates a whole new world for future generations and improves life in the here and now.

ARK
Alliance for Reason and Knowledge
145 Marten Dr. Fairbanks, Alaska 99712

PLACE STAMP HERE

CITIZENS' INITIATIVE FOR SOLUTIONS

Your guide for financing the 200 MW Interior Grid Resiliency Project

In Partnership With

What is the Interior Grid Resiliency Project?

To bridge the gap between the past and future, a coalition of individuals and organizations have embarked on a campaign to rally the People and deliver a financial plan as an alternative to increasing costs and diminishing hopes.

How does a financial plan lower expenses?

Think of all the people who invest in cars, homes, and businesses? Good financing makes the difference. Clean distributed energy is a low risk long term investment to lock in the cost of energy.

What's covered?

- Energy conservation
- Energy generation
- Energy storage
- Heating and plumbing upgrades
- Propane/LNG upgrades
- Vehicle upgrades
- ESP/ air filtration

What direct benefits can I expect?

- ◆ Affordable financing through established agents.
- ◆ Local experts to manage individual net-zero finance plan.
- ◆ Professional management of construction, PPA and O/M contracts
- ◆ Dramatic reduction in operations costs.

What's Net Zero Energy?

Net Zero Energy refers to the ability of any building to meet its power demands with onsite distributed energy resources.

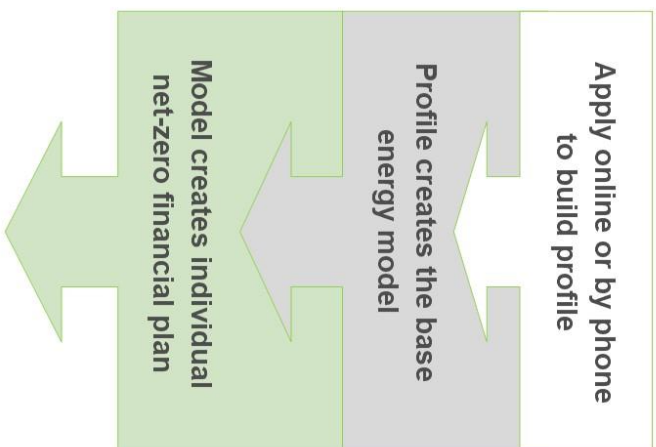
Who is ARK?

The Alliance for Reason and Knowledge (ARK) is a 501c3 nonprofit focused on facilitating practical energy solutions.

The CIS application is a grassroots campaign to negotiate a partnership between public and private interests for the 200MW Interior Grid Resiliency Project.

Is the application complicated?

Not at all. Take a look at the chart below for a brief description of how the application works and email with questions. Robertt@a-r-k.us



**By phone (TBD)
Online (TBD)**



145 Marten Dr. Fairbanks, Alaska 99712
907-799-7045 www.a-r-k.us

Appendix C: Letter of Support from UAF School of Natural Resources and Extension Fairbanks

April 30, 2019

UAF School of Natural Resources and Extension Fairbanks,

Alaska Re: Letter of support – Interior Grid Resiliency Project

Dear Competition Panel Members,

As the statewide energy specialist with University of Alaska, Fairbanks School of Natural Resources and Extension, I'm offering support for this application for funding of progress toward rethinking the grid in Fairbanks, AK. As I understand it- this proposal would give resources so that the most northern major population center in America will have the opportunity to make decisions about how to power their area with no des of multi-generated energy sources.

As an outreach educator I have been working for a number of years on nanogrid solutions so that people who are too far out and remote from the current grid could think through their energy sources at hand, document their usage and look at renovating their stock of appliances toward cooking, heating, transportation and lighting needs. I look forward to more people thinking through in their context how to create and have reliable energy in a land that has logistic, cost and security concerns. Please feel free to contact me at 907-322-2309 if we can provide any further information in support of this project.

Sincerely, Art Nash

Energy Specialist

Appendix C: Letter of Support from Solutions for Healthy Breathing

April 30, 2019

Solutions for Healthy Breathing

Alaska Re: Letter of support – Interior Grid Resiliency Project

Dear Competition Panel Members,

I have read the proposal and it is good. As the owner of a local air quality company, I feel that the social consciousness is gradually rising and awareness of the crisis (on both local and world-wide level) is growing. Unfortunately, as you well know, the political will to move urgently into the future is mired down in old money and foreign corporations. Having served on boards and commissions in the past, including the Interior Air Quality Stakeholders Group, it seems to me the model proposed in the Interior Grid Resiliency Project is a way to bypass those "old money" dynasties and that is probably how it must happen.

Good luck with this! Please feel free to contact me at 907- if we can provide any further information in support of this project.

Karl Hough,

Small Business Owner