

Katy Koon
Renewable Energy Alaska Project (REAP)
Final Report



REAP staff and interns

The final weeks of my internship at REAP consisted of designing and editing the pages that would go into the *Rural Alaska Renewable Energy Directory*. The other two interns completed their internships by the beginning of August—the lengths of their programs were determined by their respective universities—so I continued to follow up with contacts in their communities and in my own, seeking feedback and corrections to the draft pages we’d sent out earlier in the summer. At the same time, I worked to format the pages in an accessible, attractive way so that the final publication would be appealing to the variety of audiences we were hoping to reach.


In addition to this work on the directory, the latter part of my internship involved meetings with new people who could offer fresh perspectives on the direction the directory was taking. I met with Stephanie Nowers, currently a facilitator for the Islanded Grid Resource Center and previously the communications director for REAP, to ask her advice on the layout of the publication. Meeting with Stephanie gave me a better perspective on how this publication will work as an outreach and educational tool for the organization. She also challenged the original design of our earlier drafts and pushed me to rethink color scheme and graphics usage— suggestions that brought the directory to a more complete stage.

Near the end of my internship, I had the opportunity to attend REAP’s quarterly board meeting where I got to see some of the necessary processes that go into the success of a nonprofit organization. For example, I heard REAP’s financial report and fundraising discussion and sat in on the conversation about REAP’s public policy committee’s plans. During my last weeks in Anchorage, I also experienced some of the work that goes into fundraising for a nonprofit organization like REAP. I helped host a fundraising house party event where I met people interested in advocating clean energy from all over the state, including my hometown of Bethel, and, a few weeks later, I hosted the entry table at a public talk about the idea of a green bank for Alaska. These experiences helped me feel more involved in REAP’s activities as a whole. I’ve

had internships before where it was easy to feel separated from other projects and initiatives going on, but at REAP, I never felt like I was sectioned off, working exclusively on my own assigned tasks. I really felt like a member of the organization, not just an intern, and I'm grateful for that.

Ultimately, the last few weeks of my internship at REAP offered up new opportunities for me to better understand the critical work that other staff members at the organization do to advance clean energy in Alaska. I tried out a board game designed by Colleen Fisk, REAP's Energy Education Director, that simulated mapping microgrids—a game that Colleen created as an educational tool for teachers to use with their students. Playing this game with her and helping troubleshoot several of the inevitable complications that need to be worked out in a new board game showed me the kind of creativity it takes to make an educational tool that could really engage students in a subject they may have limited experience with.


Although the primary purpose of my internship this summer was to create this first-of-its-kind publication and tailor it to suit rural Alaskan communities' needs, I found that the internship involved a lot more than that. Because of this grant from the Jessica Jennifer Cohen Foundation, I was able to learn more about careers in the nonprofit sphere, the work that it takes to articulate and then advance particular policy goals, and both the challenges and rewards of working locally with community members. As I head into this first year of my master's program at the University of Chicago, I am grateful to have the perspective that this summer in Alaska gave me. My desire to work in energy and environmental policy has been reinforced by this experience, and I want to do all I can to better serve communities threatened by climate change.



Cordova

Chugach Alaska Corporation
Population: 2,279 (2017)
Pronunciation: core doh' vuh

Cordova, located on Prince William Sound in the Gulf of Alaska at the base of Eyak Mountain, has a gulf coast maritime climate and is surrounded by mountain glaciers. The city was incorporated in 1909. Its economy is largely reliant on fishing.



City Council
City of Cordova
Contact Person: Susan Bourgeois, City Clerk
Phone: 907-424-6200 / Fax: 907-424-6000
Email: cityclerk@cityofcordova.net
Address: PO Box 1210, Cordova, AK 99574

Native Village
Native Village of Eyak
Contact Person: Reyna Newirth, Executive Assistant
Phone: 907-424-7738 / Fax: 907-424-7739
Email: reyna@eyak-nv.gov

Village Corporation
The Eyak Corporation
Contact Person: Angela Butler, General Manager
Phone: 907-424-7161 / Fax: 907-424-5161
Email: info@eyakcorp.com

School
Cordova City School District
Contact Person: Alex Rassin
Phone: 907-424-3265 / Fax: 907-424-3271
Email: arassin@cordovasd.org

Housing Authority
North Pacific Rim Housing Authority
Phone: 907-424-5885 / Fax: 907-424-5884
Email: olen@nprha.com

Water Plant
Cordova Eyak Water Treatment System
Contact Person: Joel Felix
Phone: 907-424-6338
Email: water@cityofcordova.net

Health Clinic
Cordova Community Medical Center
Contact Person: Scot Mitchell, CEO/Administrator
Phone: 907-424-8000 / Fax: 907-424-8116
Email: smitchell@cdvcmc.com

Electrical Systems

Cordova has a total generation capacity of 18,050 kW, and the community used an average annual load of 2,870.25 kW during 2016. Cordova Electric Cooperative sources 77% of its electricity from its two hydroelectric plants and 23% from its one diesel plant.

The Humpback Creek hydroelectric plant has a total installed generating capacity of 1.25 MW. The Power Creek hydroelectric plant has a total installed generating capacity of 6.0 MW.

The Orca Power Plant is Cordova Electric Cooperative's diesel generation facility. It has an installed generating capacity of 10.8 MW. The aggregate diesel capacity is 10,918 kW, drawn from 6 diesel gensets (EMD 20-645E4 [2,500 kW], Fairbanks Morse 38TD81/8 [2,403 kW], Caterpillar 3516 DITA [1,125 kW], Caterpillar 3516 DITA [1,125 kW], EMD 20-710G4CT2 [3,700 kW], John Deere [65 kW]).

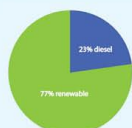
Cordova also has a heat recovery project designed to capture waste heat from the diesel plant. Cordova Heat Recovery Construction consisted of adding an Organic Rankine Cycle heat recovery unit to conserve waste heat produced by a diesel generator. This addition was designed to increase diesel electrical production by 4-6%, and its efficiency was expected to reach 15 kWh/gallon. ORC has not been required often because Cordova's reliance on diesel has decreased, and ORC is only used during long runs of the diesel system.

Humpback Creek Hydroelectric Project Construction has operated without breaks since July 2011. The operations and maintenance expenses have decreased, and operations costs have been approximately 25% of the fuel savings. Humpback Creek Hydroelectric Project Rehabilitation: the plant was in need of relocation, and the intake structure had to be replaced because it was destroyed in a fire in 2005 and flood in 2006.

The hydroelectric project has displaced 1,395,000 gallons of diesel, saving the community \$4,319,000.

Electric Utility
Cordova Electric Cooperative
Contact Person: Clay Koplin
Phone: 907-424-5555 / Fax: 907-424-5527
Email: ckoplin@cordovaelectric.com
Address: PO Box 20, Cordova, AK 99574


Electricity Generation & Costs (2016)
Average Annual Load (kW): 2,870.25
Total Generation (kWh):
19,410,370 [hydro] + 5,733,054 [diesel] = 25,143,424
Percent Diesel Generation: 23%
Percent Hydro Generation: 77%
Residential Cost per kWh: \$0.35
PCE per kWh: \$0.08
Effective Cost per kWh: \$0.27
Line Loss: 6%



REF Project:

Humpback Creek Hydro Project Construction	Humpback Creek Hydro Project Rehabilitation	Cordova Heat Recovery
Year Completed: 2011	Year Completed: 2013	Year Completed: 2013
REF Contribution: \$4,000,000	REF Contribution: \$4,000,000	REF Contribution: \$1,790,000
Construction Company: unknown	Construction Company: unknown	Construction Company: unknown
Cumulative Fuel Displaced (through 2016) (gallons): 1,395,000		
Value of Fuel Displaced: \$4,319,000		

Fuel and Heating Costs:
Powerhouse Diesel (2014): \$3.54
Gasoline (2017): \$3.69
Heating Oil (2017): \$3.19
Est. Homes Weatherized since 2008: 132 of 922



Cordova

A sample page of the *Rural Alaska Renewable Energy Directory*