Alaska Native Village Energy Development Workshop

Wind Update – Rich Stromberg

Apr. 29, 2014

Kotzebue Wind Farm

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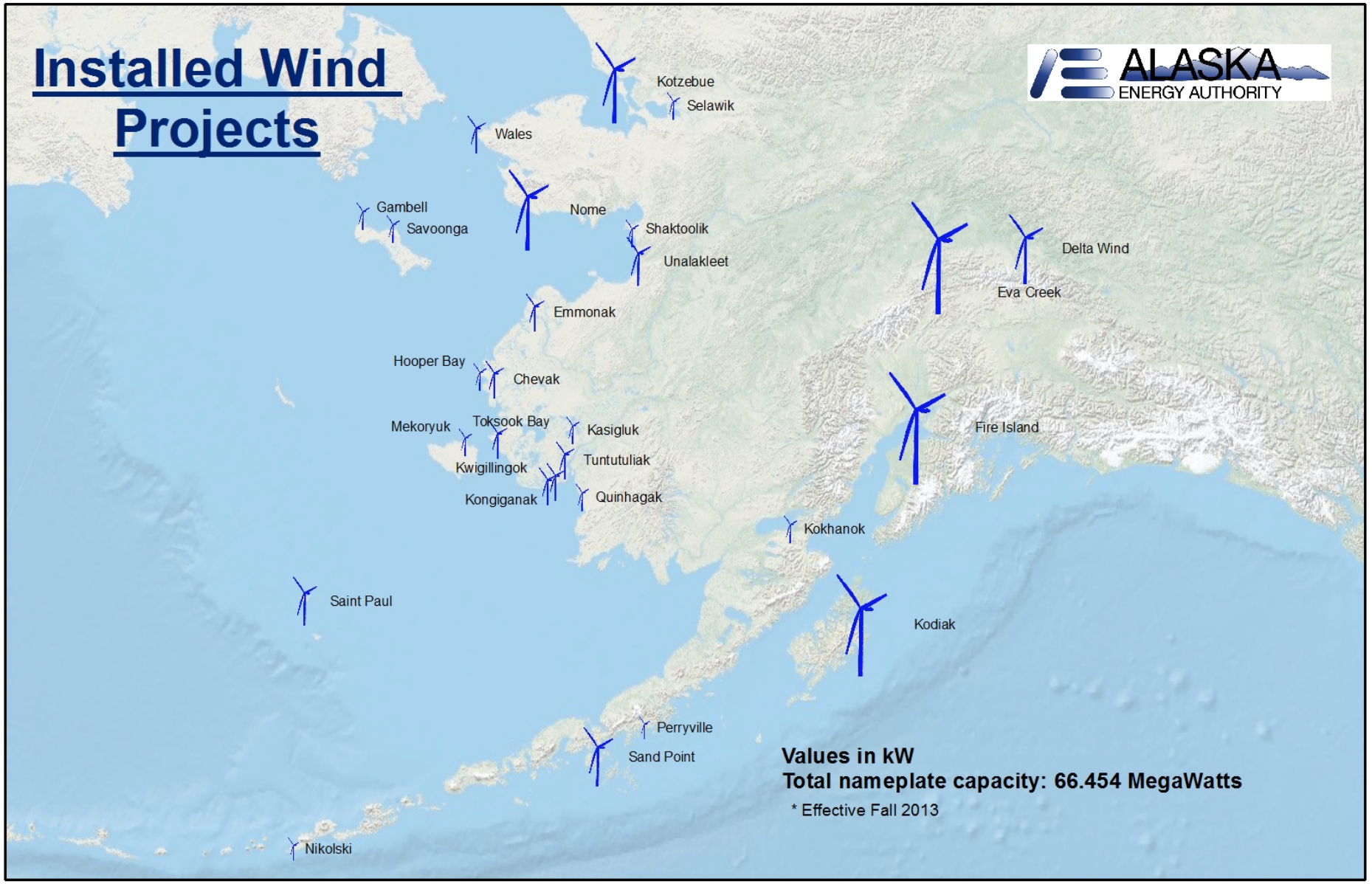

Community and Utility-Scale Wind Projects Installed in Alaska

Icon scale roughly correlates to installed capacity

Community and Utility-Scale Wind Projects Installed in Alaska

- Wind turbines in 29 communities.
- 16 Renewable Energy Fund project sites.
- More than 12 million gallons of diesel fuel and heating oil offset.
- $30 million in equivalent diesel fuel offset.

NW100B turbines in Emmonak

Photo courtesy AVEC

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Recent and Upcoming Construction Projects

- Nome Joint Utilities Systems – Two EWT 900kW turbines added to Banner Ridge.
- Alaska Environmental Power / Delta Junctions – Installed a second EWT 900kW turbine.
- City of Bethel – One 100kW Northern Power turbine installed at aquatic center.
- St. George – One 95kW remanufactured Windmatic turbine to be installed in June.
- Buckland – Two 100kw Northern Power turbines slated to be installed in the fall.

EWT DirectWind-52 900kW turbine with smaller Entegrity 65-kw turbines. *Photo AEA*

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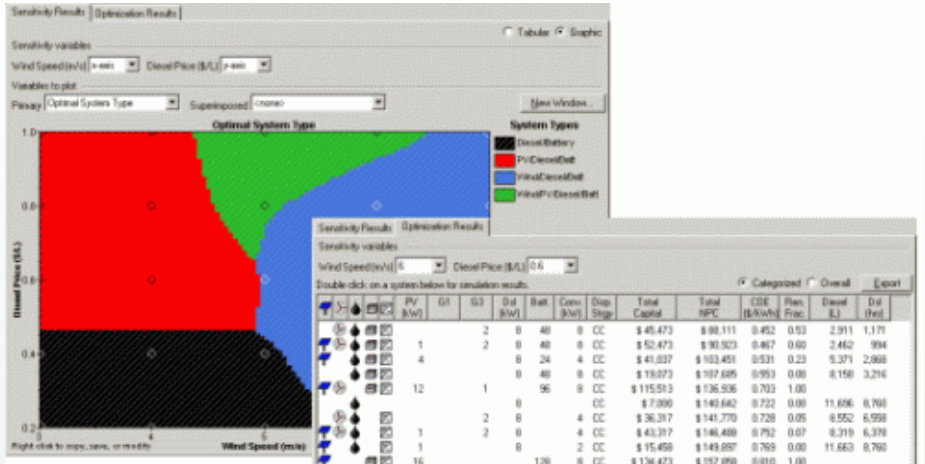
Current Options for Reconnaissance and Feasibility

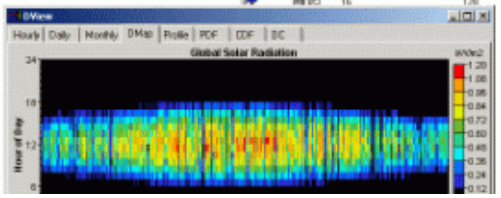
- Met tower options scalable with project size/risk.

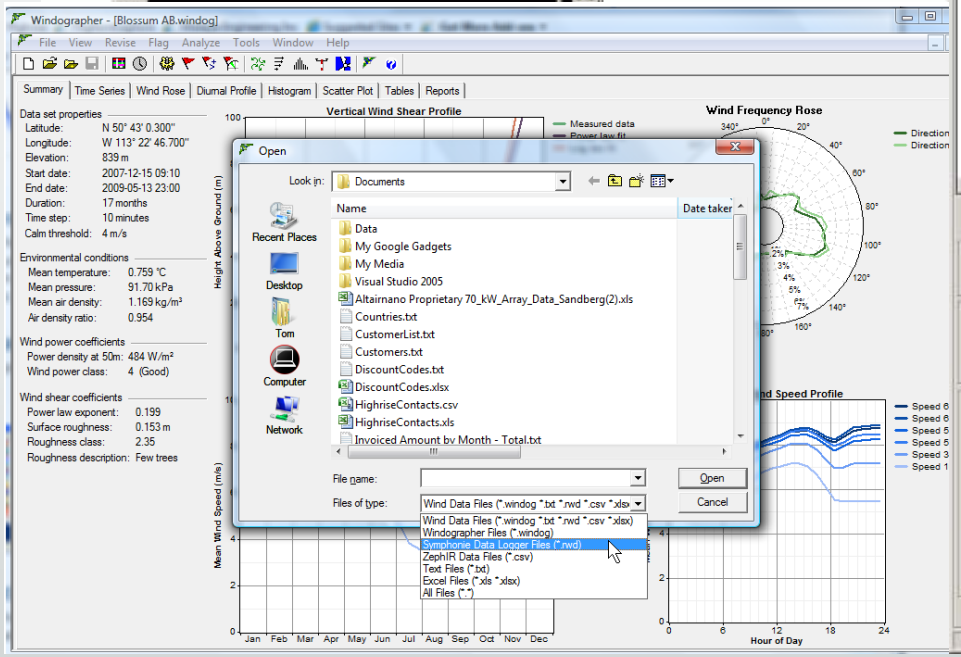
Photos courtesy AEA and Pentalum

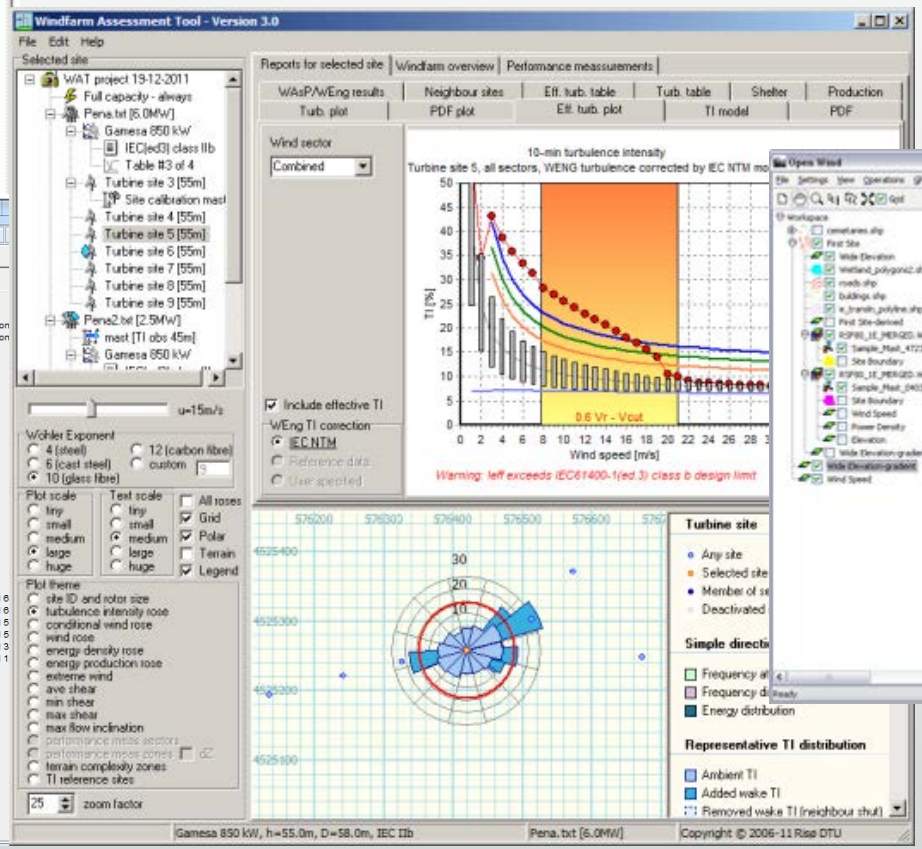
Current Options for Reconnaissance and Feasibility

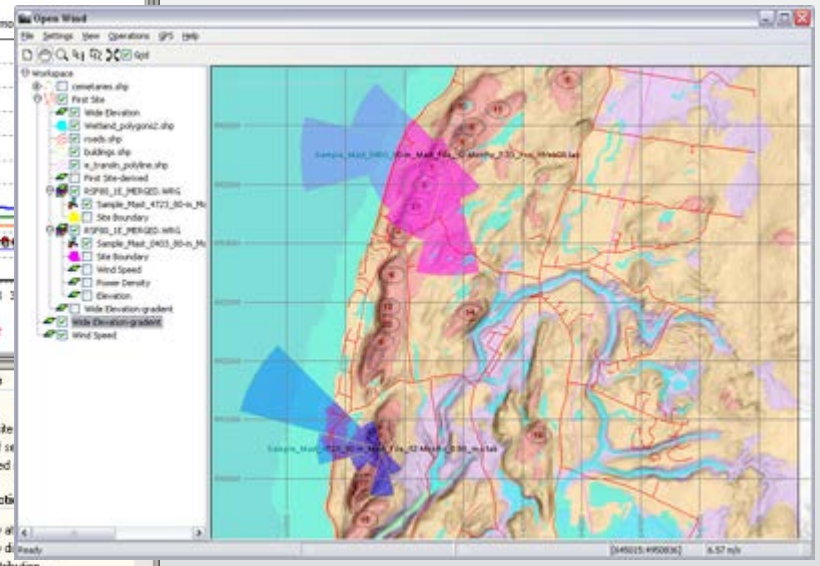
- Modeling options scalable with project size/risk.









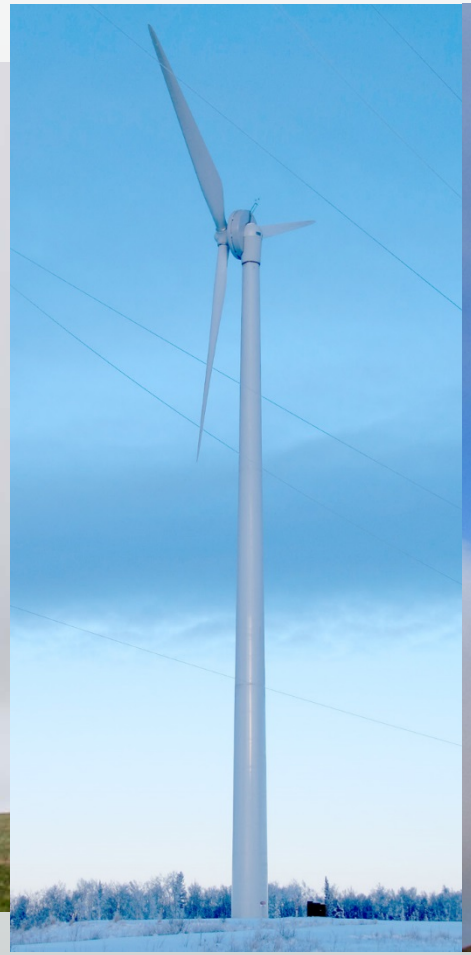


Photos courtesy HOMER Energy, Windographer, DTU Wind Energy, OpenWind

Current Wind Turbine Options for Alaska Projects

Rotor sizes: 17m, 21/24m, 27/29m, 52/54m, 77/82m, 92m

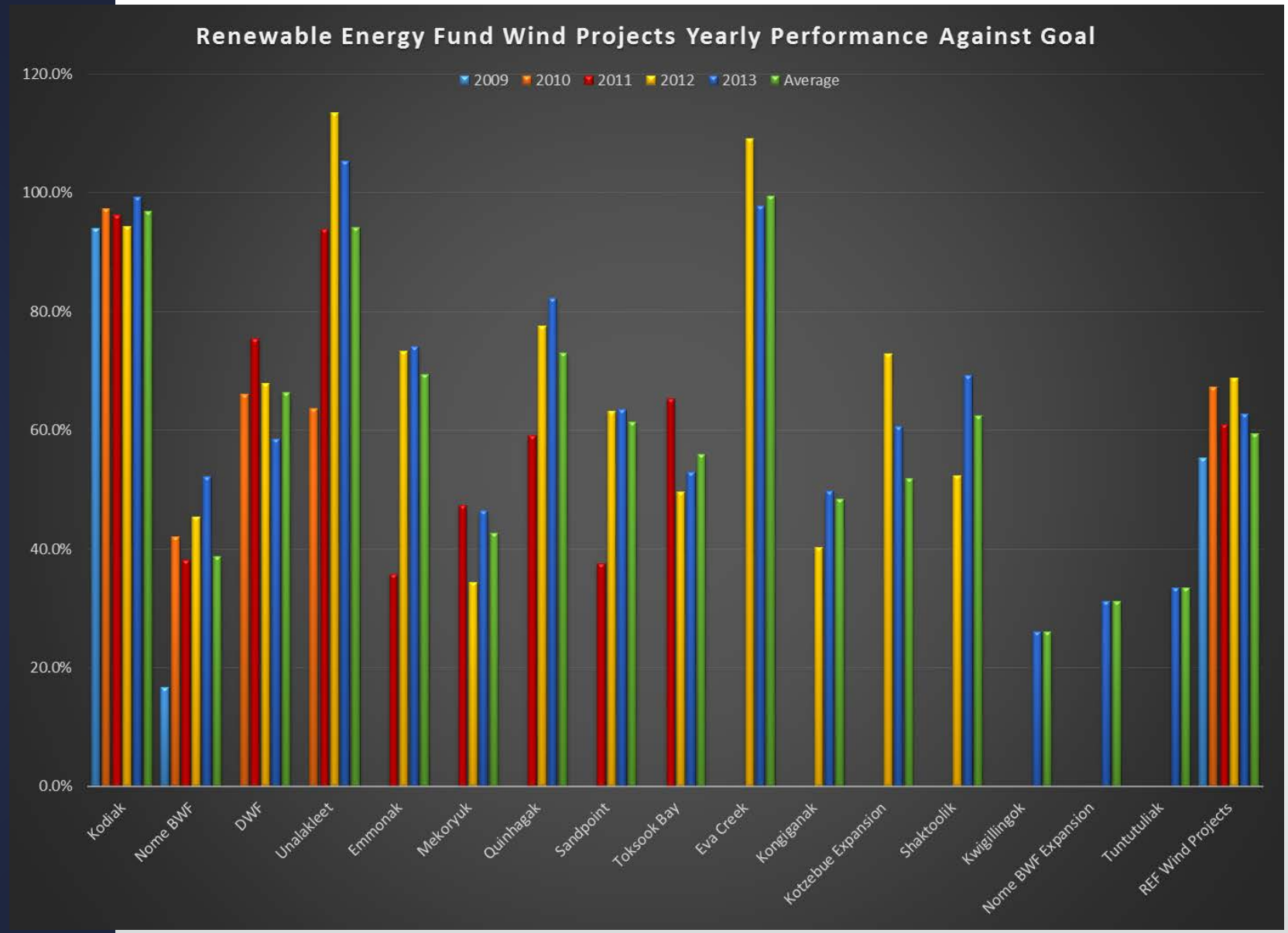
- Community size, electrical load and wind environment will dictate optimum turbines for a project.



Photos courtesy AEA, City of Bethel, TDX Power.

Construction is not the Final Step

- Building a wind project means a 20-year commitment for the community/utility to properly operate and maintain the power system.
- Actual performance of your system (and subsequent savings to your community) will vary based on the technology installed and the staffing/skill/experience of the local work force.



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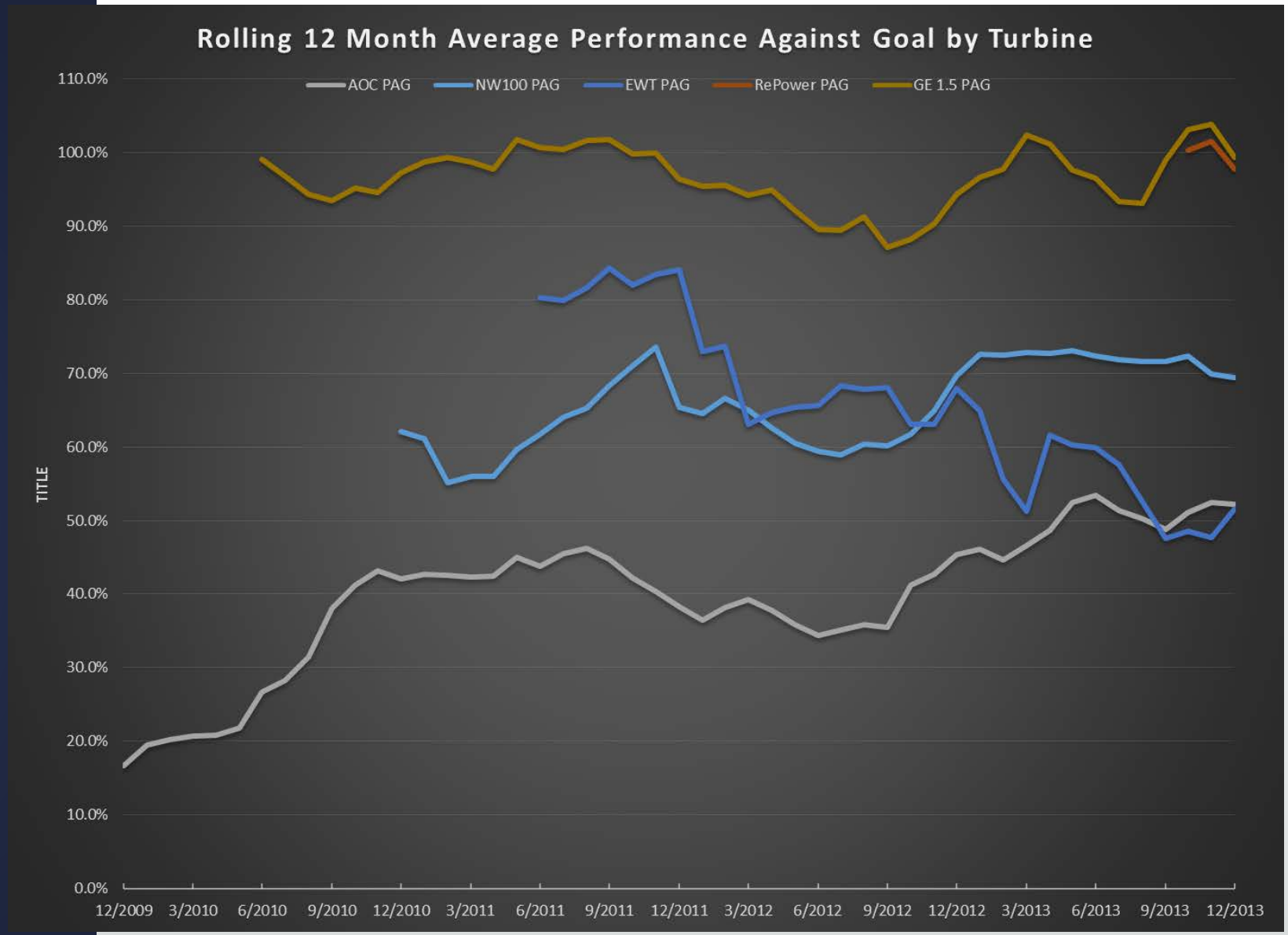

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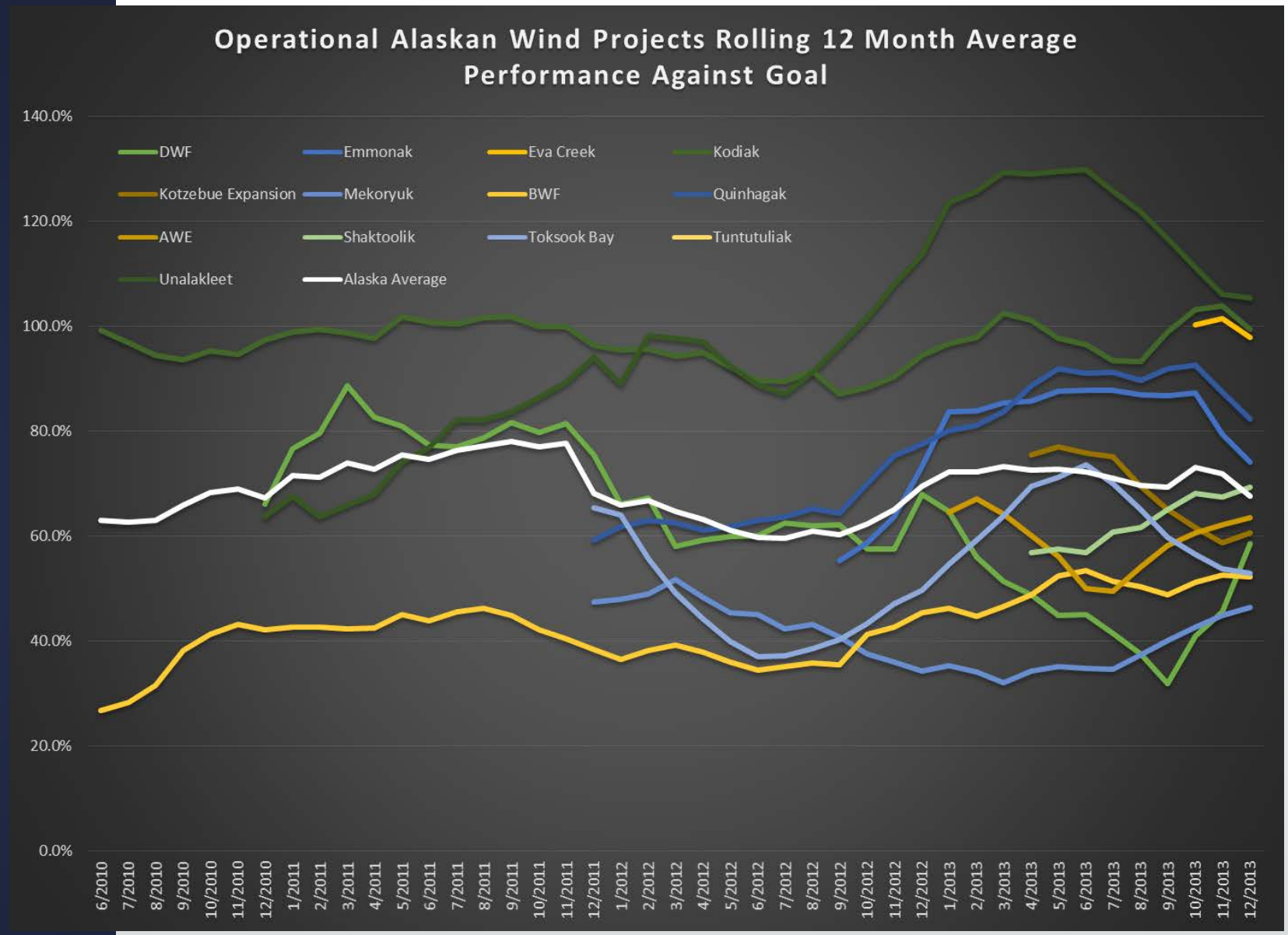

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