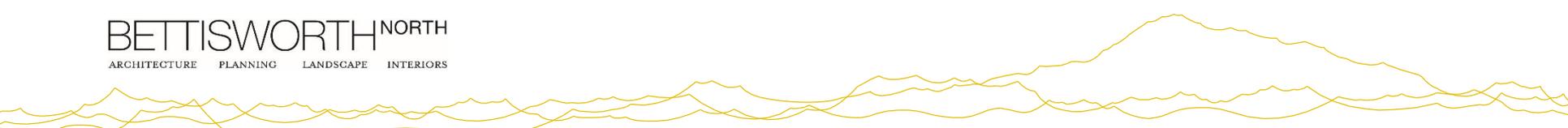


Efficiency Investing 101:

Brokering Energy Projects - Understanding the role of Project Developers Big and Small.

January 14, 2016

Who is Bettisworth North



Firm Experience



Dena Strait

- Private practice in Alaska for 10 years
- Alaska Housing Finance Corporation- 3 years
- RA – Registered Architect in Alaska
- EMP – Energy Management Professional
- CEA-IT – Certified Energy Auditor-in-Training
- LEED Green Associate
- Energy Programs Manager for Bettisworth North

Outline

- Who are Project Developers (PD)
- Understanding Procurement, Profit and Risk of PDs
- Three elements of a project
 - Service and Technical
 - Technology
 - Capital
- Presentation Goals – awake, laugh, learn something, remember Bettisworth North

Who are Project Developers?

Governmental Agencies

Non-Profits

Financiers

Advocacy Groups

Research Groups

Technical Providers

Energy Managers at Native organizations Policy Groups

Rural Energy Coordinators

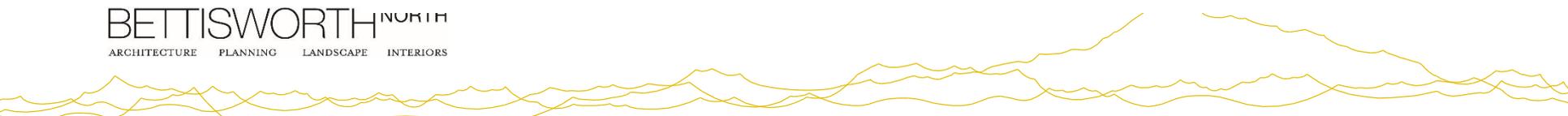
Technology

Construction Contractors

Providers

Energy Geeks/Building Scientists







Need/Want to Save Energy

Saving Energy

Understanding Procurement, Profit and Risks of a Project Developer

- Where are their weaknesses or sources of risk?
- How do they make money?
- How do they get work?

PD Business Models in Alaska



- Capital Providers
- Technology Providers
- Service & Technical Providers

How many of that type of Active PDs are there in Alaska?

- Is it a new business model, contracting approach, or industry?
- Are there others who can pick up the project and continue?
- Has it been used in your area, by building owners similar to you?

Alaska A&E Procurement

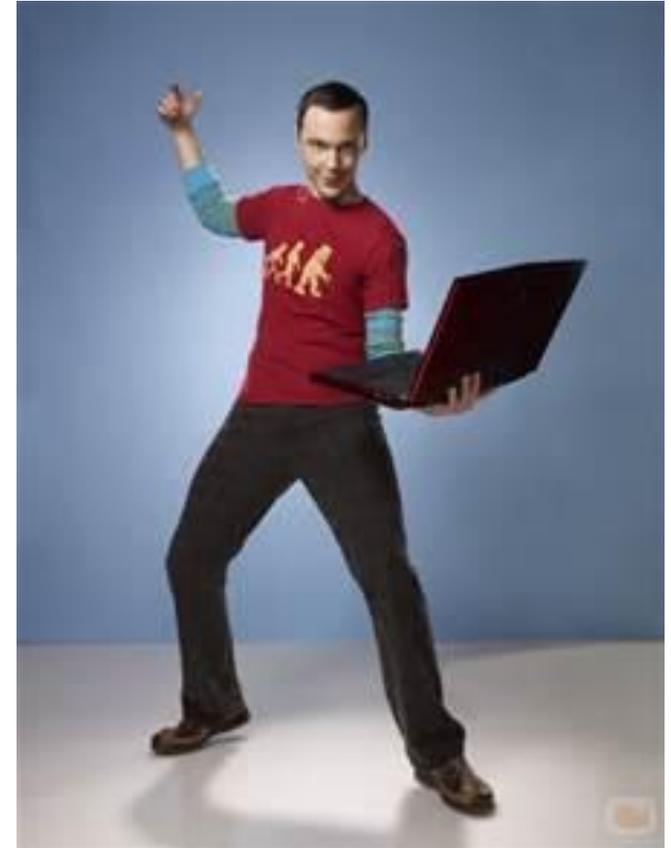


- Reputation is the most important asset we have
- Don't bid projects – Brooks Act & State equiv.
- Respond to Qualifications Based Selection



A&E Project Development

- Observation + Engineering + Math = Solution
- Run Energy Models
- Cost estimate
- Audit Report
- No incentive to manipulate numbers – it is what it is.



Bettisworth North Report/Work examples

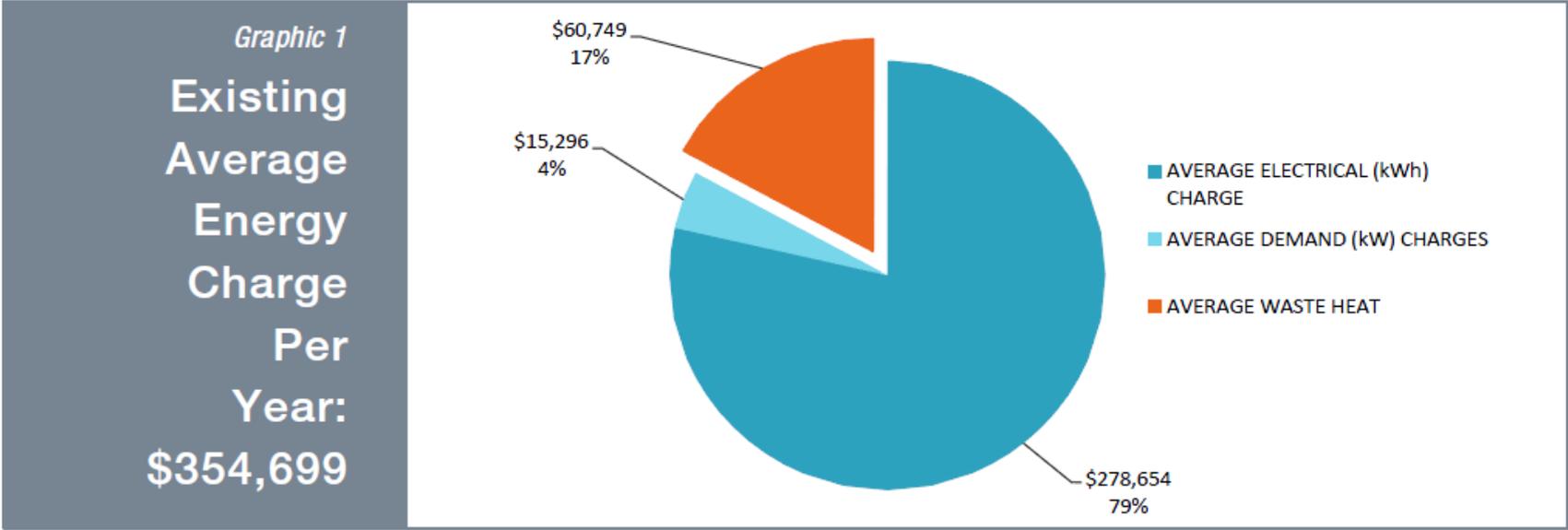
Goals

- + Improve energy efficiency to reduce energy use and associated costs
- + Provide a better educational environment for students, staff and administrators
- + Provide better access and security to the building for community use
- + Extend the life of the facility
- + Reduce the costs of operations and maintenance

Bettisworth North Report/Work examples

Year	Average Electrical (kWh) Charge	Average Demand (kW) Charges	Total Electrical Charges	Average Waste Heat	Total Annual Utility Costs
2010-2011	\$291,641	\$16,816	\$308,457	\$71,233	\$379,690
2011-2012	\$285,775	\$15,904	\$301,679	\$35,233	\$336,912
2013	\$279,092	\$14,944	\$294,036	\$71,233	\$365,268
2014	\$258,108.81	\$13,520	\$271,629	\$65,297	\$336,925
Average	\$278,654	\$15,296	\$293,950	\$60,749	\$354,699

Bettisworth North Report/Work examples



Bettisworth North Report/Work examples

Comparison of BTU Purchased as Electricity and as Fuel

Electrical: 3,413 BTU/kWh

$$1,000,000\text{BTU}/3,413 \text{ BTU/kWh} = 293 \text{ kWh/MBtu}$$

MBtu = million BTUs

$$293 \text{ kWh/MBtu} * \$0.23/\text{kWh} = \mathbf{\$67.39/MBtu}$$

Fuel Oil: 138,875BTU/Gallon

$$1,000,000\text{BTU}/138,875\text{Btu/Gallon} = 7.2 \text{ gallon/MBTU}$$

$$7.2\text{Gallon/MBTU} * \$4.30/\text{gallon} = \mathbf{\$30.96/MBtu}$$

Bettisworth North Report/Work examples

Name of Facility	Ave. Gal. Per Year	Ave. Fuel Oil kBTUs Per Year at 138.875 kTBU/Gal.	Ave. kWh Per Year	Ave. Electrical kBTUs Per Year at 3.413 BTU/kWh	Total kBTU Per Year	Building Square Footage	Energy Use Index (kBTU/SF)
Existing Police Station	545	75,663	52,847	180,366	256,028	1,440sf	178
Existing Fire Station	4,088	567,718	50,467	172,245	739,963	6,780sf	109
Baseline Public Safety Building	19,160	2,660,801	127,033	433,563	3,094,364	29,112sf	106
Proposed Public Safety Building	11,759	1,631,000	130,818	446,481	2,077,482	29,112sf	71

Bettisworth North Report/Work examples

Energy Model #	EEM Description	Investment Cost	Savings over Life Cycle
Base	Existing Building	\$0	\$0
4	Heat Recovery and AHU Reschedule	\$45,570	\$2,976,102
5	Booster Boilers	\$270,850	(\$374,120)
6	Lighting Upgrade	\$616,036	\$657,641
7	EEMs #1-#4 and #6	\$1,293,059	\$2,138,598
9	See description above	\$1,293,059	\$2,258,350

Audits and beyond

- Project Developers must understand the benefits and limitations of an audit
- Audits don't save money, Construction saves money.
- Commercial projects need capital for construction

Thank You!

Dena Strait, RA, EMP, CEA-IT, LEED Green Associate

907-561-5780

Bettisworth North Architects and Planners

dstrait@bettisworthnorth.com