

Municipality of Anchorage – Policy Initiative

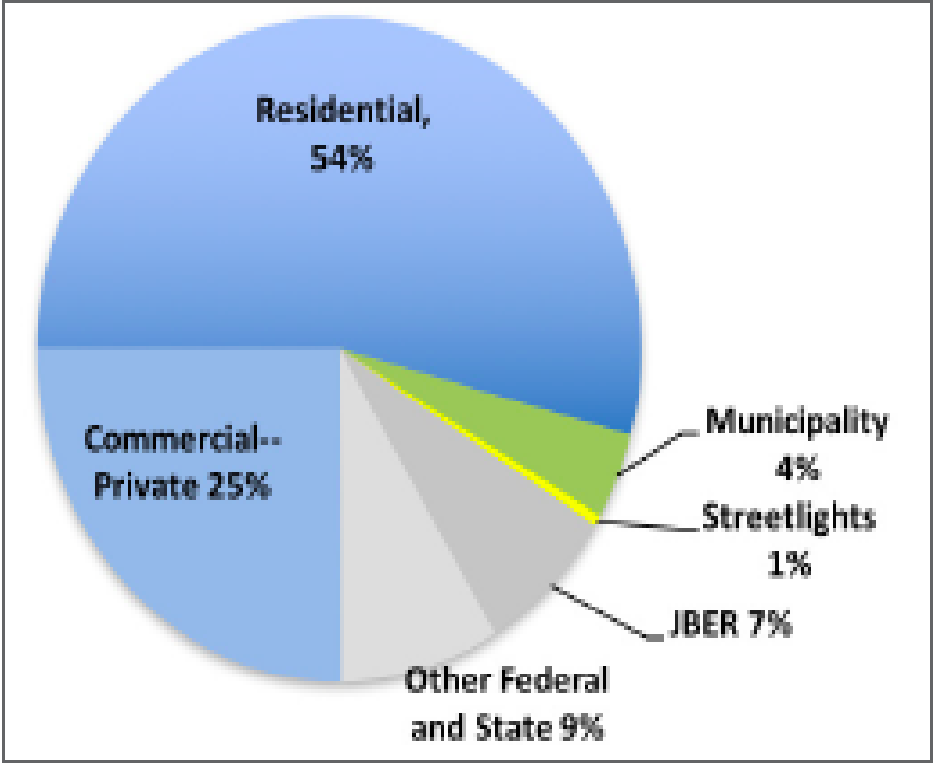


The Proverbial Energy Pie

Table 1-ES. Anchorage 2015 End Use Energy Consumption of Major Energy Sources* (Billion Btu)

Sector / Subsector	Electricity	Natural Gas	Highway Motor Fuel	Total
Residential	2,371	14,273	Not estimated by sector	16,644
Commercial				
Municipality of Anchorage				
AWWU	53	106		160
Merrill Field	3	4		7
Port of Anchorage	8	9		17
School District	230	531		761
Solid Waste Services	10	15		26
Municipal Facilities**	125	204		329
Total***	430	868		1,298
State	Not Estimated			
Federal				
JBER	682	1,612		2,294
Non-Military	Not Estimated			
Streetlights****	156		156	
Private	3,648	4,054	7,702	
Total Commercial	5,360	8,727	14,087	
Transportation	Not Estimated		34,814	34,814
Total All Sectors	7,731	23,000	34,814	65,545

Figure 1-ES. Combined Electricity and Natural Gas Consumption



Commercial Building Benchmarking

Figure 17. Electricity Use for Anchorage Office Building on Typical Weekday

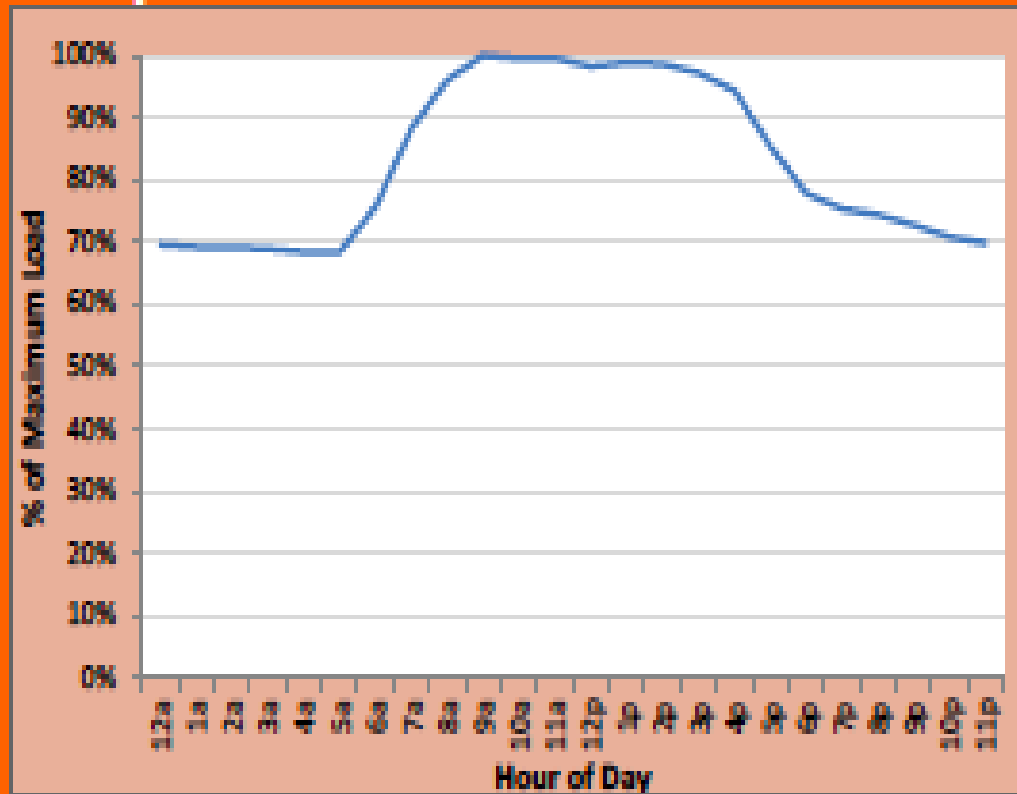
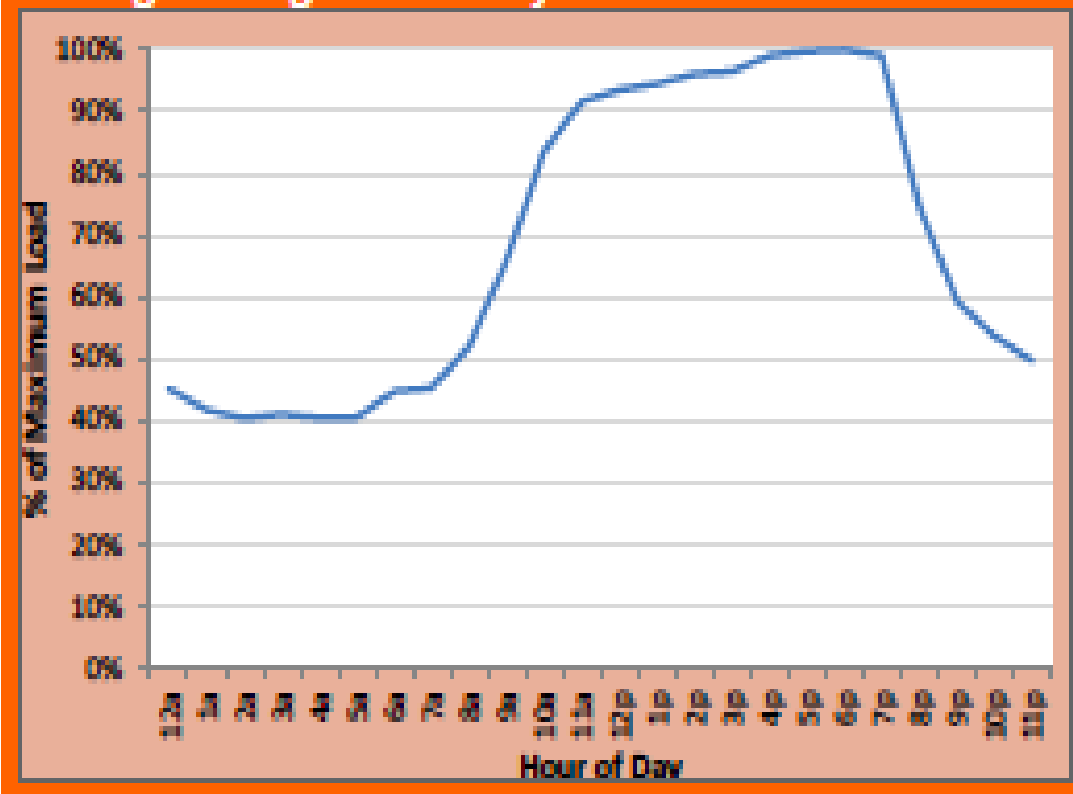
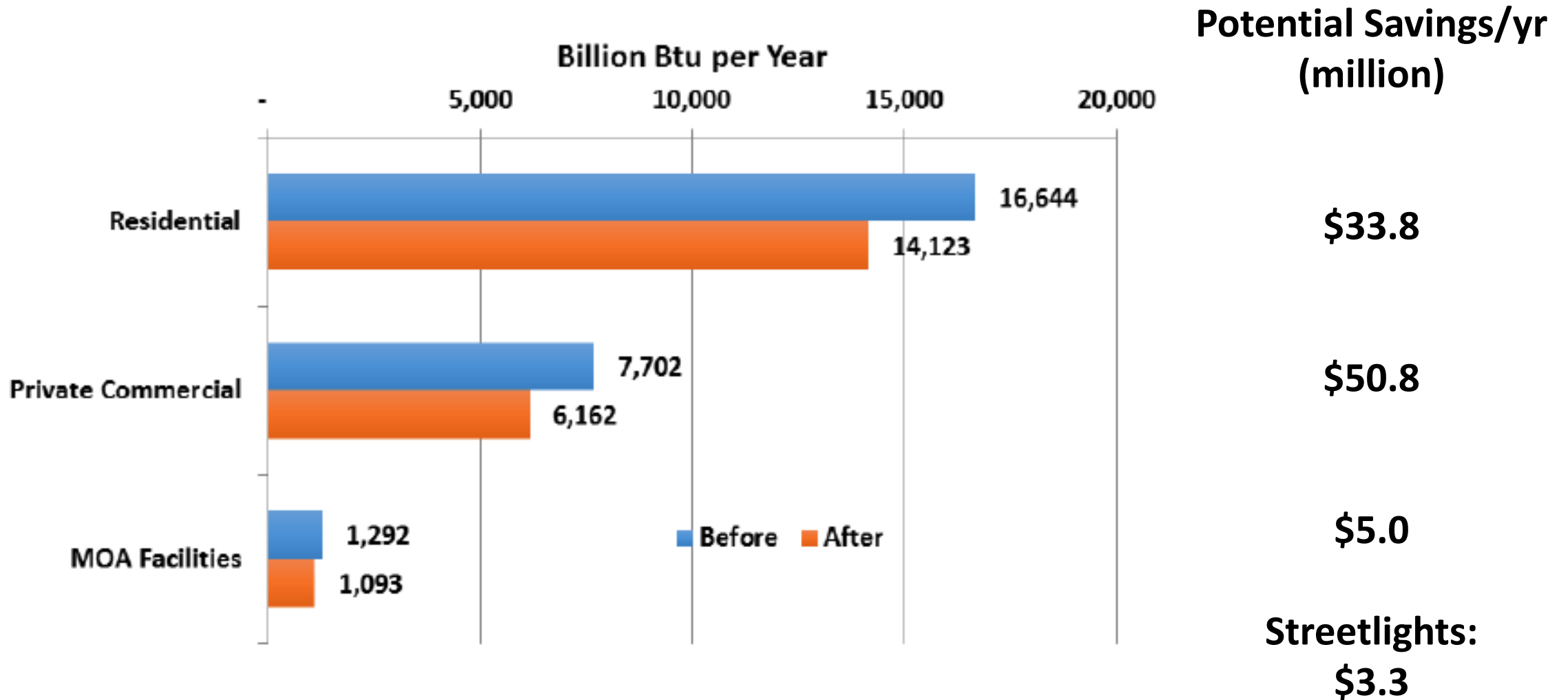


Figure 18. Electricity Use for Another Anchorage Office Building with Higher Efficiency



Opportunity	Net Cost (1,000\$)	Savings (1,000\$/yr)	Simple Payback (yr)	Energy Savings (Billion Btu/yr)	Renewable Energy (Billion Btu/yr)	Note
Energy Manager Position	150	150	1	–	–	One staff position to implement projects described in report; assume revenue neutral annual expenditure
Efficiency #1. Inter-Departmental Cooperation & Aggregate Projects	–	–	–	–	–	Result in labor and cost savings, improved financing terms and streamlined implementation
Efficiency #2. ML&P-Chugach -MEA Power Pool & System Operator	TBD	15,000	0.0	1,000	0.0	Power Pooling estimated at \$10.20 Million/1 Bcf gas savings annually plus additional for greater Railbelt; in-process; costs To Be Determined
Efficiency #3. School District Building Efficiency	20,986.1	2,998.0	7.0	121.7	0.0	CHP could add substantial additional savings & generation; microgrid potential
Efficiency #4. MOA Facility Efficiency	10,467.7	1,495.4	7.0	52.6	0.0	Standard EE/Wx, especially LEDs, building controls/monitoring, condensing boilers
Efficiency #5. Water and Sewer Facility Efficiency	2,806.3	400.9	7.0	20.2	0.0	Standard EE/Wx plus heavy equipment controls, water distribution temperature in-process w ML&P
Efficiency #5a. Asplund WWTF Sludge Gasification	5,000.0	1,834.9	2.7	78.3	33.5	Necessary large capital project, payback on marginal additional cost
Efficiency #6. Solid Waste Services Building & Collection Efficiency	590.9	84.4	7.0	4.0	0.0	LEDs, Wx, system controls, possible rolling stock electrification not calculated
Efficiency #6a. Regional Landfill Leachate Line	3,113.6	795.9	3.9	1.6	0.0	Energy + Health & Safety benefits
Efficiency #7. LED Streetlights and Controls	21,600.0	3,252.2	6.6	74.0	0.0	Across multiple jurisdictions; initiated
Efficiency #8. POA Modernization	–	–	–	–	–	Overall project very large; energy options & impacts need further study; Energy storage & microgrid potential; thermal snow removal potential
Efficiency #9. Private Residential EE Programs	216,652.1	33,827.4	6.4	2,520.7	0.0	Theoretical, based on existing building stock, MOA, AEA, CCHRC & AHFC data
Efficiency #9a. Private Commercial and Industrial EE	355,512.6	50,787.5	7.0	1,540.4	0.0	Theoretical, based on existing building stock, MOA, AEA, CCHRC & AHFC data
Renewable #1. Fire Island Wind Farm Expansion	–	–	–	–	152.4	Tax credit timing constraint; under consideration
Renewable #2. Landfill Gas to Energy Expansion	–	–	–	–	70.6	Currently under evaluation; near future peak fuel production adds urgency
Renewable #3. PV Installations	–	–	–	–	2.9	Primary residential & Commercial benefits could be much higher; estimate is for 1 MW community solar project
Renewable #4. Fats, Oils and Grease Program	–	–	–	–	47.2	Public-Private Partnership likely required
Fuel Switching #1. Large Facility/District CHP	406.0	102.0	4.0	–	–	Highly site specific; estimate here based on vendor-provided results for one project; many projects possible; microgrid potential
Fuel Switching #2. Heat Recovery From Existing Generation	–	–	–	–	–	Project specific opportunities require further evaluation, but may have significant promise for multiple stakeholders, especially EGS and SWS/JBER/Doyon LFGTE
Fuel Switching #3. Private Electric Vehicles (1,000 vehicles)	11,500.0	1,066.7	10.8	0.0	0.0	Assumes incentive pricing of \$0.10/kWh and \$3.50/gallon gasoline; need charging stations
Fuel Switching #3a. People Mover Electric Buses (Fleet of 20)	6,500.0	476.5	8.4	0.0	0.0	Assumes incentive pricing of \$0.10/kWh, \$3.00/gallon diesel fuel, and FAST grant; need charging stations
Integrated Lifestyle Opportunities	–	–	–	–	–	Housing, food growing, rentable EVs + walkability, Community Center, job training

Energy Efficiency Programs: Potential Impacts



Energy Efficiency Recommendations

(Non-residential Facilities)

- Establish an Energy Manager Position at the Municipality
- Streamline EE options for private building owners, e.g.
 - Provide education/outreach, access to auditors, possible incentives for audits
 - Access to loan financing.
 - Consider C-PACE (commercial property assessed clean energy) program