ALASKA SUSTAINABLE ENERGY ACT
ANNUAL REPORT

DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES

2020 PROGRESS REPORT

Submitted January 2021

EXECUTIVE SUMMARY

In accordance with AS 44.42.067(d), this 2020 Progress Report is presented to the Alaska State Legislature and details the progress of the State of Alaska Department of Transportation and Public Facilities (DOT&PF) in reducing the state's energy consumption.

AS 44.42.067 (a) requires that the DOT&PF shall work with other state agencies to retrofit 25% of all public facilities that are at least 10,000 square feet and larger, starting with the least energy efficient facilities. This goal was achieved in 2014. The DOT&PF continues to develop and execute further energy efficiency projects in order to accomplish energy improvements in as many state facilities as possible. The DOT&PF also provides guidance to communities, municipalities, school districts and other local governments to help them carry out energy efficiency projects.

The DOT&PF and other state agencies have been working to reduce the state's energy consumption through the use of energy savings performance contracts or other means for many years. To present, through the use of energy savings performance contracts, the state has accomplished energy savings performance projects in over 75 facilities and has achieved cumulative annual cost avoidance of approximately **$4.1 Million.** The cumulative energy savings achieved through the performance contracts is presented in **Table 1** below:

Table 1
Cumulative Annual Energy Savings through Energy Savings Performance Projects

Energy Type Saved	Cumulative Annual Total	Unit
Electricity	>10,461,245	kWh
Natural Gas	>277,123	CCF
Heating Oil	>308,476	Gallons
CO2 Reduction[1]	>13,240	Tons

Completed state energy savings performance projects have been accomplished through commercial financing, federal and state agency funds. The major accomplishments for 2020 include:

- Completion of Department of Environmental Conservation (DEC) Environmental Health Laboratory Energy Upgrades.
- Completion of the Department of Education and Early Development (DEED) Andrew P. Kashevaroff Alaska State Library, Archives, and Museum Investment Grade Energy Audit and Energy Services Proposal.

Initiatives for 2021 include:

- Development and implementation of currently planned energy efficiency projects including the DOA Fairbanks Regional Office Building Energy Upgrades, DOT&PF Central Region Lighting Upgrades, and others.

[1] Estimated CO2 reduction calculated utilizing EPA Greenhouse Gas Equivalencies Calculator.

- Continue prioritization of energy projects, review and refresh energy data in state databases, and coordinate with state deferred maintenance program efforts, to maximize the potential and synergy of energy program and deferred maintenance projects.

- Continued support to other state agencies, governmental and education entities in their energy efficiency efforts.

The Office of Management and Budget (OMB) has outlined approved standard procedures for state agencies to finance energy efficiency projects through third party lenders including the AHFC Energy Efficiency Revolving Loan Program.

The DOT&PF continues to coordinate with the AHFC and all state agencies on the input of utility and building information into the **Alaska Retrofit Information System (ARIS)**, the web based system used by state agencies to collect and store energy consumption and cost data.

TABLE OF CONTENTS

EXECUTIVE SUMMARY 2

1.0 INTRODUCTION 5

2.0 ENERGY EFFICIENCY RETROFIT PROJECTS 6

2.1 ENERGY SAVINGS PERFORMANCE PROJECTS COMPLETED 6

2.2 ENERGY SAVINGS PERFORMANCE PROJECTS IN-PROGRESS 7

3.0 ENERGY CONSUMPTION AND COST DATA ANALYSIS 8

4.0 COORDINATION WITH OTHER AGENCIES 8

APPENDICES

A.1: TERM DEFINITIONS

A.2: ENERGY SAVINGS PERFORMANCE PROJECTS INFORMATION

A.3: ARIS ENERGY CONSUMPTION AND COST DATA

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1.0 INTRODUCTION

The State of Alaska Department of Transportation and Public Facilities (DOT&PF) present this 2020 progress report to the Alaska State Legislature. Progress in this report includes work completed through 2020.

AS 44.42.067 requires the DOT&PF to retrofit at least 25 percent of all State of Alaska public facilities, excluding court and legislative buildings, over 10,000 square feet no later than January 1, 2020. This 25 percent goal was achieved at the end of 2014. The DOT&PF continues to develop and execute projects for State of Alaska public facilities and is committed to progression of the energy efficiency program.

There still remains great need for energy efficiency improvements in state, local government and educational facilities throughout Alaska. The DOT&PF is able to assist these entities by providing expert knowledge, technical assistance and energy savings performance contract resources.

The milestones for continued achievement, growth and development of the energy efficiency program include:

- Continued collection of energy consumption and cost data for facilities to generate Energy Use Indexes (AS 37.07.040 (12)).
- Identifying and prioritizing the least energy efficient facilities.
- Determining project scopes for energy retrofit work in those facilities that will meet net cost savings within approximately 15 years.
- Working with state agencies to arrange funding or financing for determined energy retrofit projects.
- Contracting with Energy Services Companies to perform energy performance contracts.
- Executing the energy retrofit projects and verifying the energy savings.
- Continuous monitoring of state energy consumption to be compared to levels of past years.
- Outreach, education and technical assistance to communities, local governments, and school districts to enable them in accomplishing energy efficiency projects.
- Continued coordination with the Alaska Housing Finance Corporation (AHFC) and Alaska Energy Authority (AEA).

Utility Information for facilities continues to be entered in the AHFC Alaska Retrofit Information System (ARIS). This information is being used to generate energy use indexes for the purposes of determining energy use consumption changes and assisting in prioritizing facility energy efficiency retrofit projects.

For many years, state agencies have performed projects that result in energy savings and are continually striving to perform more energy efficiency projects. The DOT&PF encourages and educates agencies on Energy Savings Performance Contracting and assists agencies in developing specific projects intended to utilize the program.

Subsequent sections of this report provide details on energy efficiency projects in progress, analysis of the utility consumption and expense data collected through ARIS, and the DOT&PF's coordination with other agencies.

2.0 ENERGY EFFICIENCY RETROFIT PROJECTS

This section details energy efficiency related projects in-progress and completed by the DOT&PF in 2020.

2.1. ENERGY SAVINGS PERFORMANCE CONTRACTING PROJECTS COMPLETED

In 2020, the Department of Environmental Conservation Environmental Health Laboratory Energy Upgrades project was completed. The annual combined savings of this project is shown in **Table 2** below. The project description follows.

Table 2:
2020 Completed Projects Annual Savings Summary

Electricity (kWh/Yr.)	Natural Gas (CCF/Yr.)	Water (kGal)	Annual Energy Savings
506,687	114,832	288	$197,985

Department of Environmental Conservation
Project: Environmental Health Laboratory (EHL) Energy Upgrades

This project accomplished major system upgrades to the laboratory's main heating systems, HVAC systems, laboratory exhaust and process heating systems, lighting and lighting controls, building automation, and retro-commissioning.

EHL New Main Heating & Steam Systems

Significant improvements in the operations of the laboratory were made possible through optimizing and retrofitting of the laboratory's mechanical systems, incorporating heat recovery, and improvements to the process steam systems.

Construction was done through the spring and summer of 2020. Results of the project save greater than 80% of the previous natural gas consumption, 50% of the electrical consumption, and 25% of the water consumption. This project is an example of how even relatively modern facilities (less than 15-years old) can greatly benefit from the energy savings performance project process.

EHL, Anchorage, AK

2.2. ENERGY SAVINGS PERFORMANCE CONTRACTING PROJECTS IN-PROGRESS

Department of Education and Early Development
Project: Andrew P. Kashevaroff Alaska State Library, Archives, and Museum Energy Upgrades

This project will optimize the major ventilation and building automation control systems at the facility, upgrade select lights to LEDs, and carry out retro-commissioning and air-balancing of the ventilation systems. Implementation is scheduled to begin in January with construction completion anticipated fall 2021. Annual energy and operational savings are anticipated to be greater than $120,000.

Table 3: Energy Savings Performance Projects In-Progress

Agency	Affected Facilities	Location	Project Phase, Status or Note
DOA	Fairbanks Regional Office Building	Fairbanks	Investment Grade Energy Audit in-progress. This project will upgrade and optimize the main cooling system and potential other systems as determined. Anticipated 2021 activities include implementation and construction of the new cooling system.
DOT&PF	Central Region Street Lighting	Anchorage & Mat-Su Alaska	Investment Grade Energy Audit in-progress. This project includes upgrading street and highway lighting to LED throughout Central region and installing advanced lighting controls to maximize efficiency. Anticipated 2021 activities include finalizing the Investment Grade Energy Audit, scope, and commencing implementation.
DOT&PF	DOT&PF South Coast Facilities	Southeast Alaska	Development Phase. Anticipated 2021 activities include selection of the energy savings performance contractor, the Investment Grade Energy Audit and Implementation.

PROJECT PRIORITIZATION

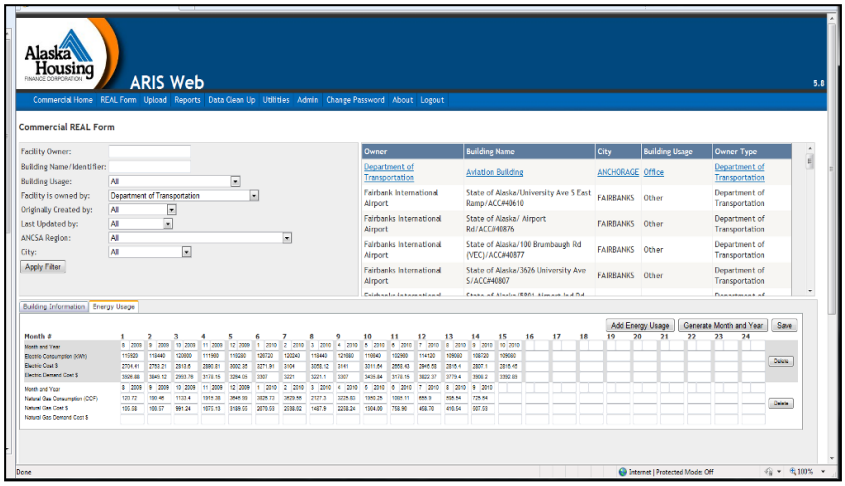
When developing a project, priority is given to facilities that are least energy efficient. However, other factors such as individual facility and department needs as well as the geographic locations of the facilities must also be considered.

Because completing the work as cost effectively as possible is essential when commencing energy efficiency retrofit projects, the DOT&PF groups projects by geographic locations to the extent possible. This assists in expediting project completions, reducing project costs, and maximizing project resources. However, it may mean one group of facilities includes multiple departments and multiple funding sources and that energy retrofits to facilities are not completed in exact order of their baseline Energy Use Indexes.

Through the ARIS system, utility consumption and cost data information is collected and entered for state public facilities by individual agencies. Provided that there is sufficient available data, the state can determine the Energy Use Indexes - the energy use per square foot - of individual facilities. Using this information, the state can examine individual facility Energy Use Indexes to identify the least energy efficient facilities and find potential candidates for energy efficiency upgrades.

3.0 ENERGY CONSUMPTION AND COST DATA ANALYSIS

The Alaska Housing Finance Corporation developed the Alaska Retrofit Information System **(ARIS) -** a web-based platform to collect energy consumption and expense data for state-owned facilities.



ARIS

The Office of Management and Budget coordinated with the DOT&PF and AHFC and directed that all state agencies input their respective facility energy consumption and cost information into ARIS.

Information entered by state agencies and the university remain continually in-progress and each are in various stages of entering in respective data. A number of state owned smaller, specialized use and residential facilities are not represented in ARIS, including such buildings as sand and cold storage buildings, seasonal residential buildings, shelters, cabins and various others because they have negligible or minimal energy use.

The DOT&PF has analyzed gross available data in ARIS and adjusted for potential errors and missing information where possible. Analysis is based on a per square foot level of information entered into ARIS. Present available information shows a gross Energy Use Index decrease from 2018 to 2019. A decrease is expected in 2020 at this time, as not all 2020 annual energy consumption data has been entered in ARIS as of date of this report.

It is important to note that the analysis is based only on the available information entered into ARIS at present. Multiple other factors greatly affect and influence annual energy consumption including weather, facility programmatic changes, plug-load equipment and the individual missions of each agency. Further analysis will be possible in the future as further information is captured.

4.0 COORDINATION WITH OTHER AGENCIES

The DOT&PF continues to work closely with all executive branch agencies in coordinating, developing and executing energy savings performance projects. The DOT&PF also continues to work with the AHFC and the Alaska Energy Authority (AEA); both partners in the efforts to achieve the goals of the Alaska Sustainability Act.

AHFC, AEA and the DOT&PF are working together to provide strategic energy efficiency programs, education and outreach to state public facilities, local governments, school districts and communities in Alaska.

APPENDIX

A.1: Term Definitions

AkWarm-C©: AHFC data collection software for energy audits.

Alaska Retrofit Information System (ARIS): data collection, management, and information access resource for state agency utility information and AHFC AkWarm-C© files.

Baseline Conditions: the baseline energy consumption and operating conditions for a facility, including the equipment inventory and conditions, occupancy, energy consumption rate, control strategies, etc. in place prior to implementation of EEMs.

Baseline Energy Consumption: for any billing period, the Energy Consumption that would have been incurred by the Facility if the ESCO Services and ESCO Equipment had not been implemented, as calculated by utilizing the data, methodology and variables set forth in the Energy Performance Contract.

Benchmarking: An initial assessment of energy use for a facility to collect data that may be used for a variety of purposes, including prioritizing projects for funding, assessing the building's energy use against available end use indexes (EUI), and developing an Alaska-specific EUI.

Billing Period: the time period as set forth in the Energy Services Proposal (e.g. month, quarter, year) used to calculate Energy Savings for the Facility.

Commissioning: (From ASHRAE Guidance, "The Commissioning Process") a quality-oriented process for achieving, verifying, and documenting that the operation and performance of facilities, systems, and assemblies meets defined objectives and criteria.

Energy Consumption: the amount of energy and power, in the form of electricity, natural gas, oil, propane, or other energy source, consumed in the Facility in any Billing Period, as calculated by utilizing the data, methodology and variables set forth in the Energy Performance Contract. Energy consumption may also include other utilities such as water and wastewater.

Energy Cost Index: the total annual energy cost for all energy sources to operate a building, reported in $/ft2.

Energy Cost Savings: savings in units of consumption (e.g. kWh, kW demand, therms, CCF, gallons, etc.) in a Billing Period times the cost per unit of consumption for the Billing Period, as established in the Energy Performance Contract.

Energy Conservation Measures (ECMs): Policies and procedures intended to reduce a building's energy consumption by modifying human behavior. ECMs are administrative controls, such as training employees to turn lights off in un-used areas, disconnect appliances that are not in use, lower room temperature thermostat set-points, etc.

Energy Efficiency Measure (EEMs): Per 10 CFR 420.2, any capital improvement that reduces energy costs in an amount sufficient to recover the total cost of purchasing and installing such measure over an appropriate period of time and maintains or reduces energy consumption from non-renewable sources.

Energy Savings Performance Contract (ESPC): the contracting mechanism between the Facility Owner and the Energy Services Company that implements energy efficiency measures to achieve guaranteed energy savings. Projects can be executed without up-front capital through energy project loan funds, with capital funds, or combinations of loan and capital funds.

Energy Savings: for each form of energy for each Billing Period, the difference between the Baseline Energy Consumption for that Billing Period and the Energy Consumption actually incurred in that Billing Period as set forth in the Energy Performance Contract.

Energy Services Company (ESCO): a contractor that performs the energy audit, design, implementation, and measurement and verification of savings for energy efficiency retrofit projects.

Energy Use Intensity or Energy Use Index (EUI): Energy Use Intensity or Energy Use Index (EUI): a unit of measurement that describes a building's energy use in units of energy consumed by the building per unit area of square footage (BTU/ft2), or BTU/ft2/year. The EUI is used to compare a building's energy use to others of similar size and end use.

The energy consumed is converted into BTUs and divided by the square footage of the building. The EUI can then be used to compare and rank all facilities. The larger the EUI, the more energy consumed per square foot. Different types of facilities will have different EUIs based on their operational function, equipment, space usage and occupancies. For example, a health care or laboratory facility, an office facility, and a parking facility will all have very different EUIs, ranging from highest to lowest respectively.

Typical units for measuring the energy consumption are.

Energy Source	**Category**	**Measured In Units of**	
Electrical Consumption	Electricity	Kilowatt-hours	kWh
Electrical Demand	Electricity	Kilowatt	kW
Natural Gas	Heating	Thousand Cubic Feet	ccf
Heating Fuel Oil	Heating	Gallons	gal
Propane	Heating	Gallons	gal

Investment Grade Audit: an energy analysis of a facility to identify cost effective EEMs. The Investment Grade Audit provides detailed engineering investigation and report of a facility's current baseline energy and water consumption, equipment condition, operation, performance, maintenance, potential energy and water efficiency upgrades, life cycle costs, and risks for future performance.

Measurement and Verification (M&V): (From the Efficiency Valuation Organization "Energy Savings Measurement Guide") the process of using measurement to reliably determine actual savings created within an individual facility by an energy management, energy conservation or energy efficiency project or program. As savings cannot be directly measured, the savings can be determined by comparing measured use before and after implementation of a project, making appropriate adjustments for changes in conditions."

A.2: Energy Savings Performance Projects

Energy Savings Performance Projects Completed Through DOT&PF Statewide Public Facilities

Last Updated: *December 21, 2020*

	Related ESPC RFP #	Project No.	Agency	Project Name	Year Completed	Facility(s)	Total Bldg Sq. Ft.	Total Number Bldgs Completed	Qty Bldgs > 10K Sq. Ft.	City	Project Scope	Project Energy Savings: Elec kW	Elec (kWh)	Gas (CCF)	Heating Oil (Gal)	Water (kGal)	Project Total Energy Savings ($)	Total Project Cost ($)	Fund Source	ESCO	Notes
								77	**49**		***CUMULATIVE ENERGY SAVINGS TOTALS=> (For Completed Projects)***	**12,538**	**10,461,245**	**277,123**	**308,476**	**41,974**		**$ 40,905,976**			
2021																					
	5		DOA	Fairbanks Regional Office Building Energy Upgrades		Fairbanks Regional Office Building		1			Cooling System Replacement										
	4		DEED	Andrew P. Kashevaroff Alaska State Library, Archives, and Museum Energy Upgrades		Andrew P. Kashevaroff Alaska State Library, Archives, and Museum	158,000	1	1	Juneau	Optimization of Building Automation Systems, Select Lighting, UPS, Retro-commissioning, air balancing										
2020																					
	2		DEC	Environmental Health Laboratory Energy upgrades	2020	Environmental Health Lab	23,000	1	1	Anchorage	Compreshensive: Heating systems, ventilation, interior and exterior lighting, and more	782	506,687	114,832		288	$ 197,985	$ 3,001,669	Financing TBD	Siemens	Implementation in Progress
2019																					
	1		DOT&PF	Anton Anderson Memorial Tunnel Campus	2019	Anton Anderson Memorial Tunnel Campus	242,735	7		Whittier	Building lighting, Tunnel Lighting, lighting contrls, VFDs, SCADA		714,547				$ 169,792	$ 2,952,144	Financed: Bank of America	Johnson Controls	Construction Substantially Complete
2016																					
	9		DOC	Spring Creek Correctional Center Energy Upgrades	2016	Spring Creek Correctional Center	205,952			Seward	Exterior bldg and mast lighting, interior lighting, central heating plant upgrades, DDC Optimization	2,889	1,120,944		43,904		$ 349,041	$ 3,197,162	Financed: Bank of America	Siemens	Energy & cost savings data from Siemens 2016 M&V Report
2015																					
	11		DOT&PF	DOT&PF Northern Region Energy Upgrades	2016	Multiple Northern Region Maintenance Facilities	115,846	16	4	Chitina, Enerstine, Gulkana, Nelchina, Paxson Fairbanks, Slana, St. Mary's, Tazlina	Interior and exterior lighting, DDC upgrades, heating system upgrades, programmable thermostats, building envelope upgrades, CHP, re-commissioning study	1,243	375,544		27,103		$ 261,241	$ 3,555,534	Financed: Bank of America	Siemens	Energy & cost savings data from Siemens 2016 M&V Report
	8	PJ 81121-A	DEED	MEHS Campus-Wide Energy Upgrades (Ph-2)	2014	Bldg 289-Central Heating Plant, Bldg 290-Cafeteria , Bldg 292-Boys Dorm,	226,431	8	7	Sitka	Campus Wide DDC Upgrades, Bldg 1331-Gym Hydronic Heating Piping Replacement, Upper		153,027		39,361		$ 234,881	$ 2,721,701	State Funded	Siemens	Need to update with 2014 M&V Report
	7	PJ 81136	DFG	Fairbanks Regional Headquarters Energy	2014	Regional HQ Bldg, Indoor Shooting, Range, Sealing Laboratory	39,632	3	2	Fairbanks	Lighting Upgrades, lighting controls, laboratory	363	122,060		4,841		$ 43,434	$ 521,822	State Funded	Ameresco	
2013																					
	1	PJ 80058	DOC	Dept. of Corrections Facilities (Change Order)	2013	Lemon Creek Correctional Center	85,088	1	1	Juneau	DDC Upgrade to Supply Fan (SF-3) system in 'Mod Section' of LCCCC				1,099		$ 2,660	$ 221,534	State Funded	Siemens	Energy & cost savings data from Siemens 2013 IGA&ESP.
	8	PJ 81121	DEED	MEHS Upper Campus Heating Upgrades (Ph-1)	2013	Bldg 289-Central Heating Plant, Bldg 290-Cafeteria , Bldg 292-Boys Dorm, Bldg 293-Girls Dorm, Bldg 295-				Sitka	Upper Campus Heating Plant Boiler Replacements, Primary Heating and Domestic Water Distribution Piping Replacments,		4,192		27,430		$ 155,077	$ 1,809,569	State Funded	Siemens	Energy & cost savings data from Siemens 2014 M&V Report
		PJ 83023-81163	DPS	DPS Fairbanks Alaska State Trooper Bldg Energy Upgrades	2013	Fairbanks State Trooper Building	35,352	1	1	Fairbanks	Lighting retrofits including DMV and Dispatch, HVAC upgrades, Conference Room Window Upgrade,		50,372		45		$ 7,174	$ 749,995	State Funded	Siemens	Energy & cost savings data from Siemens 2013 IGA&ESP
2012																					
	1	83080-A	DOT&PF-SR	DOT&PF-Southeast Region Facilities	2012	7-Mile Facility	53,700	1	1	Juneau	Heating System Replacement, DDC Upgrade, VFD drives and high efficiency motors		24,157		5,688		$ 46,135	$ 1,219,816	ARRA Funded	Siemens	Energy & cost savings data from Siemens 2012 M&V Report
					2012	AMHS Maint Bldg	5,000	1		Juneau	Lighting Upgrades, Destrat Fan		42,648		(187)						
					2012	Sitka State & City Office	28,138	1	1	Sitka	Lighting Upgrades, Lighting Controls		67,127		(934)						
					2012	Ketchikan State Court & Office	36,218	1	1	Ketchikan	Boiler Replacements, VFDs, 3-Way Valves		4,979		4,204						

Energy Savings Performance Projects Completed Through DOT&PF Statewide Public Facilities

Last Updated: *December 21, 2020*

Related ESPC RFP #	Project No.	Agency	Project Name	Year Completed	Facility(s)	Total Bldg Sq. Ft.	Total Number Bldgs Completed	Qty Bldgs > 10K Sq. Ft.	City	Project Scope	Project Energy Savings: Elec kW	Elec (kWh)	Gas (CCF)	Heating Oil (Gal)	Water (kGal)	Project Total Energy Savings ($)	Total Project Cost ($)	Fund Source	ESCO	Notes
1	83080-A	DOC	Dept. of Corrections Facilities	2012	Ketchikan Correctional Center	18,092	1	1	Ketchikan	Boiler Replacements				5,813		$ 22,913	$ 1,288,680	ARRA Funded & State Funded	Siemens	Energy & cost savings data from Siemens 2012 M&V Report
				2012	Lemon Creek Correctional Laundry	9,066	1		Juneau	Thermal Fluid Heating System				3,607						
1	83080-A	DEED	Dept. of Education Facilities	2012	MEHS Gymnasium Bldg	53,826	1	1	Sitka	Lighting Upgrades, Lighting Controls		71,041		(1,037)		$ 8,122	$ 327,956	ARRA Funded	Siemens	Energy & cost data from Siemens 2012 M&V Report
				2012	Sitka SJ Muesum	6,500	1		Sitka	Lighting Upgrades, Lighting Controls, Demand Controlled Ventilation		35,803								
2	83080-B: DOTPF-CR	DOT&PF-CR	DOT&PF- Central Region Facilities	2012	Palmer Vehicle Maintenance Shop	12,600	1	1	Palmer	Lighting Upgrades, Lighting Controls, Boiler Rep	43	23,790	48,846			$ 55,389	$ 1,290,320	ARRA Funded	Ameresco	Energy & cost data from Ameresco 2012 M&V Report
				2012	Communications Bldg	12,432	1	1	Anchorage	Lighting Upgrades, Lighting Controls, Boiler Rep	277	113,188	645							
2	83080-B: DOL&WD	DOL&WD	AVTEC Facilities	2012	AVTEC First Lake Facility	20,000	1	1	Seward	Lighting Upgrades, Lighting Control Upgrades, B	384	112,753		2,391		$ 29,172	$ 334,950	ARRA Funded	Ameresco	Energy & cost data from Ameresco 2012 M&V Report
2	83080-B: DF&G	DF&G	DF&G Cordova Facilities	2012	Cordova Administration Bldg	3,920	1		Cordova	High Eff. Boiler Replacment, Lighting, Upgrades, Lighting controls, DDC Upgrades, instantaneous water heater	45	11,447		684		$ 9,471		ARRA Funded	Ameresco	Energy & cost data from Ameresco 2012 M&V Report
				2012	Cordova Bunkhouse	3,876	1		Cordova	High Eff. Boiler Replacment, Lighting, Upgrades,	21	2,253		729			$ 328,374			
2	83080-B: DNR	DNR	DNR Facilties	2012	Forestry Palmer Admin Bldg	15,678	1	1	Palmer	High Eff. Boiler Replacement, Lighting Controls, DDC system improvements, Instantaneous Hot Water Heater		6,047	2,732			$ 12,797	$ 334,950	ARRA Funded	Ameresco	Energy & cost data from Ameresco 2012 M&V Report
				2012	Forestry Palmer Warehouse Bldg	18,000	1	1	Palmer	Lighting upgrades, lighting controls, radiant heat controls, night temperature setback, unified water metering	94	18,712	1,540							
				2012	Forestry Palmer Hanger	15,000	1	1	Palmer	Lighting upgrades, lighting controls, radiant heat controls, vehicle door replacement, hanger door seal, instantaneous water heater	104	33,795	2,239							
3	83080-C: DOTPF-NR	DOT&PF-NR	DOT&PF-Northern Region Facilities	2012	Peger Road HQ Bldg	21,900	1	1	Fairbanks	Hydronic Heating System, High Eff. Motors, DDC Upgrades, Window Replacement		509,317		(10,989)		$ 58,580	$ 1,274,413	ARRA Funded	Siemens	Energy & cost data from Siemens 2012 M&V Report
3	83080-C: DPS	DPS	DPS Facilities	2012	Coldfoot Hanger	4,053	1		Coldfoot	Lighting Upgrades, Heating System Upgrade, Building Envelope Upgrades		5,040		1,183		$ 7,412	$ 326,889	ARRA Funded	Siemens	Energy & cost data from Siemens 2012 M&V Report
3	83080-C: DMVA	DMVA	DMVA Facilties	2012	Anchorage Armory	210,283	1	1	JBER	High Eff. Boiler Upgrade			33,359			$ 27,066	$ 669,123	ARRA Funded	Siemens	Energy & cost savings data from Siemens 2012 M&V Report
4	83080-D: DOA	DOA	DOA Facilities	2012	Atwood Bldg	338,000	1	1	Anchorage	DDC Upgrades, Stack Effect Correction			3,333			$ 10,610	$ 932,202	ARRA Funded	Siemens	Energy & cost savings data from Siemens 2012 M&V Report
				2012	Community Bldg	22,400	1	1	Juneau	DDC Heating System Upgrades,				2,989						
5	83080-E: DHSS	DHSS	DHSS Facilties	2012	Assets Bldg	24,310	1	1	Anchorage	High Efficiency Boiler Upgrade			2,844			$ 8,619	$ 351,317	ARRA Funded	Ameresco	Energy & cost savings data from Ameresco engineering data
				2012	McLaughlin Youth Center	60,705	1	1	Anchorage	Lighting and Lighting Control Upgrades		70,714								
6	PJ 54552	DOT&PF-CR	Aviation Bldg Boiler Upgrades	2012	DOTPF-CR Aviation Bldg Boilers	62,000	1	1	Anchorage	High Efficiency Boiler Upgrade, DDC Panel Upgrades, AHU O/A Damper Improvements			11,045			$ 7,765	$ 495,856	State Funded	Siemens	Energy & cost savings data from Siemens 2012 IGA&ESP

2011

				2009	Anchorage Correctional Center		1	1	Anchorage	Comprehensive										
				2009	Hiland Mountain Correctional		1	1	Eagle River											
				2009	Spring Creek Correctional		1	1	Seward											

Energy Savings Performance Projects Completed Through DOT&PF Statewide Public Facilities

Last Updated: *December 21, 2020*

Related ESPC RFP #	Project No.	Agency	Project Name	Year Completed	Facility(s)	Total Bldg Sq. Ft.	Total Number Bldgs Completed	Qty Bldgs > 10K Sq. Ft.	City	Project Scope	Project Energy Savings					Project Total Energy Savings ($)	Total Project Cost ($)	Fund Source	ESCO	Notes
											Elec kW	Elec (kWh)	Gas (CCF)	Heating Oil (Gal)	Water (kGal)					
N/A		DOC	State of Alaska: Department of Corrections Energy Savings Performance Project (Phase 2)	2009	Wildwood Correctional		1	1	Kenai		5,856	3,538,268	42,202	58,200	38,763	$ 966,253	$ 9,000,000	Financed: Siemens Financial Services	Siemens	Energy & cost savings data from Siemens Year (3) M&V Report submitted 2012
				2009	Fairbanks Correctional		1	1	Fairbanks											
				2009	Lemon Creek Correctional		1	1	Juneau											
				2009	Yukon Kuskokwim Correctional		1	1	Bethel											
				2009	Anvil Mountain Correctional		1	1	Nome											
N/A		DOT&PF/DOA	State of Alaska: Department of Administration / Department of Transportation & Public Facilities Energy Savings Performance Project (Phase 1)	2006	Dimond Courthouse		1	1	Juneau	Comprehsensive	437	2,722,793	13,506	92,352	2,923	$ 557,763	$ 4,000,000	Financed: Key Bank	Siemens	Energy & cost savings data from Siemens Year (3) M&V report submitted 2009
				2006	Alaska Office Building		1	1	Juneau											
				2006	Court Plaza Building		1	1	Juneau											
				2006	Douglas Island Building		1	1	Juneau											
				2006	State Office Building		1	1	Juneau											
				2006	Aviation Building		1	1	Anchorage											
				2006	DOT&PF Annex Building		1	1	Anchorage											
				2006	Public Safety Building		1	1	Anchorage											

Cumulative Annual Energy Cost Savings from Energy Savings Performance Projects

Applicable Escalation Factors

Energy => 3.50%
Operations & Maintenance => 2.00%

AGENCY / PROJECT	TYPE	Year 2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	
DOA/DOTPF	Energy	$ 557,763	$ 577,284.71	$ 597,489.67	$ 618,402	$ 640,046	$ 662,447	$ 685,633	$ 709,630	$ 734,467	$ 760,174	$ 786,780	
(SOA Phase 1)	Operations	$ 13,034	$ 13,294.68	$ 13,560.57	$ 13,832	$ 14,108	$ 14,391	$ 14,678	$ 14,972	$ 15,271	$ 15,577	$ 15,888	
													$ 802,668 Subtotal
DOC	Energy			$ 966,253	$ 1,000,072	$ 1,035,074	$ 1,071,302	$ 1,108,798	$ 1,147,605	$ 1,187,772	$ 1,229,344	$ 1,272,371	
(SOA Phase 2)	Operations			$ 2,491	$ 2,541	$ 2,592	$ 2,643	$ 2,696	$ 2,750	$ 2,805	$ 2,861	$ 2,919	
													$ 1,275,289 Subtotal
DOT&PF-SE	Energy			$46,135.00	$ 47,750	$ 49,421	$ 51,151	$ 52,941	$ 54,794	$ 56,712	$ 58,697	$ 60,751	
	Operations			$1,768.00	$ 1,803	$ 1,839	$ 1,876	$ 1,914	$ 1,952	$ 1,991	$ 2,031	$ 2,071	
													$ 62,822 Subtotal
DOC	Energy			$22,913.00	$ 23,715	$ 24,545	$ 25,404	$ 26,293	$ 27,213	$ 28,166	$ 29,152	$ 30,172	
	Operations				$ -	$ -	$ -	$ -	$ -	$ -			
													$ 30,172 Subtotal
DEED - MEHS	Energy			$8,122.00	$ 8,406	$ 8,700	$ 9,005	$ 9,320	$ 9,646	$ 9,984	$ 10,333	$ 10,695	
	Operations			$1,802.00	$ 1,838	$ 1,875	$ 1,912	$ 1,951	$ 1,990	$ 2,029	$ 2,070	$ 2,111	
													$ 12,806 Subtotal
DF&G	Energy			$9,135.00	$ 9,455	$ 9,786	$ 10,128	$ 10,483	$ 10,850	$ 11,229	$ 11,622	$ 12,029	
	Operations			$336.00	$ 343	$ 350	$ 357	$ 364	$ 371	$ 378	$ 386	$ 394	
													$ 12,423 Subtotal
DOL-AVTEC	Energy			$27,268.00	$ 28,222	$ 29,210	$ 30,233	$ 31,291	$ 32,386	$ 33,519	$ 34,693	$ 35,907	
	Operations			$1,904.00	$ 1,942	$ 1,981	$ 2,021	$ 2,061	$ 2,102	$ 2,144	$ 2,187	$ 2,231	
													$ 38,138 Subtotal
DOT-CR	Energy			$54,679.00	$ 56,593	$ 58,574	$ 60,624	$ 62,745	$ 64,941	$ 67,214	$ 69,567	$ 72,002	
	Operations			$710.00	$ 724	$ 739	$ 753	$ 769	$ 784	$ 800	$ 816	$ 832	
													$ 72,834 Subtotal
DNR	Energy			$12,016.00	$ 12,437	$ 12,872	$ 13,322	$ 13,789	$ 14,271	$ 14,771	$ 15,288	$ 15,823	
	Operations			$781.00	$ 797	$ 813	$ 829	$ 845	$ 862	$ 880	$ 897	$ 915	
													$ 16,738 Subtotal
DMVA	Energy			$27,066.00	$ 28,013	$ 28,994	$ 30,009	$ 31,059	$ 32,146	$ 33,271	$ 34,436	$ 35,641	
	Operations				$ -	$ -	$ -	$ -	$ -	$ -			
													$ 35,641 Subtotal
DPS	Energy			$7,412.00	$ 7,671	$ 7,940	$ 8,218	$ 8,505	$ 8,803	$ 9,111	$ 9,430	$ 9,760	
	Operations			$184.00	$ 188	$ 191	$ 195	$ 199	$ 203	$ 207	$ 211	$ 216	
													$ 9,976 Subtotal
DOT-NR	Energy			$58,580.00	$ 60,630	$ 62,752	$ 64,949	$ 67,222	$ 69,575	$ 72,010	$ 74,530	$ 77,139	
	Operations				$ -	$ -	$ -	$ -	$ -	$ -			
													$ 77,139 Subtotal
DOA	Energy			$10,610.00	$ 10,981	$ 11,366	$ 11,763	$ 12,175	$ 12,601	$ 13,042	$ 13,499	$ 13,971	
	Operations				$ -	$ -	$ -	$ -	$ -	$ -			
													$ 13,971 Subtotal
DOT&PF Aviation Bldg	Energy			$ 7,765	$ 8,037	$ 8,318	$ 8,609	$ 8,911	$ 9,222	$ 9,545	$ 9,879	$ 10,225	
Boiler Upgrades	Operations				$ -	$ -	$ -	$ -	$ -	$ -			
													$ 10,225 Subtotal
DPS Fairbanks Alaska	Energy				$ 7,174	$ 7,425	$ 7,685	$ 7,954	$ 8,232	$ 8,520	$ 8,819	$ 9,127	
State Trooper Bldg	Operations					$ -		$ -	$ -	$ -			
													$ 9,127 Subtotal
DEED-MEHS Upper Campus Heating Upgrades	Energy				$ 131,179	$ 135,770	$ 140,522	$ 145,441	$ 150,531	$ 155,800	$ 161,252	$ 166,896	
(Phase 1)	Operations				$ 45,000	$ 45,900	$ 46,818	$ 47,754	$ 48,709	$ 49,684	$ 50,677	$ 51,691	
													$ 218,587 Subtotal

Cumulative Annual Energy Cost Savings from Energy Savings Performance Projects

Applicable Escalation Factors

Energy => 3.50%
Operations & Maintenance => 2.00%

AGENCY / PROJECT	TYPE	Year											
		2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	
DOC Lemon Creek SF-3 DDC Upgrades	Energy				$ 2,660	$ 2,753 $ -	$ 2,849	$ 2,949 $ -	$ 3,052 $ -	$ 3,159 $ -	$ 3,270	$ 3,384	**$ 3,384 Subtotal**
DEED-MEHS Campus Wide Energy Upgrades (Phase 2)	Energy Operations					$ 174,881 $ 60,000	$ 181,001.84 $ 62,100.00	$ 187,336.90 $ 64,273.50	$ 193,893.69 $ 66,523.07	$ 200,679.97 $ 68,851.38	$ 207,703.77 $ 71,261.18	$ 214,973.40 $ 73,755.32	**$ 288,729 Subtotal**
DF&G Fairbanks Regional HQ Energy Upgrades	Energy Operations					$ 43,434	$ 44,954.19	$ 46,527.59	$ 48,156.05	$ 49,841.51	$ 51,585.97	$ 53,391.48	**$ 53,391 Subtotal**
DOT&PF Northern Region Energy Upgrades	Energy Operations						$ 219,296 $ 41,945	$ 226,971.36 $ 42,783.90	$ 234,915.36 $ 43,639.58	$ 243,137.40 $ 44,512.37	$ 251,647.20 $ 45,402.62	$ 260,454.86 $ 46,310.67	**$ 306,766 Subtotal**
DOC Spring Creek Correctional Center Energy Upgrades	Energy Operation							$ 313,375 $ 35,667	$ 324,343.13 $ 36,380.34	$ 335,695.13 $ 37,107.95	$ 347,444.46 $ 37,850.11	$ 359,605.02 $ 38,607.11	**$ 398,212 Subtotal**
DOT&PF AAMT (Whitttier Tunnel)	Energy Operations										$ 147,171 $ 22,621	$ 152,321.99 $ 23,073.42	**$ 175,395 Subtotal**
DEC Environmental Health Lab	Energy Operatoins											$ 197,985 $ 21,982	

$ 4,144,401 ***=> 2020 Cumulative Annual Energy Cost Savings***

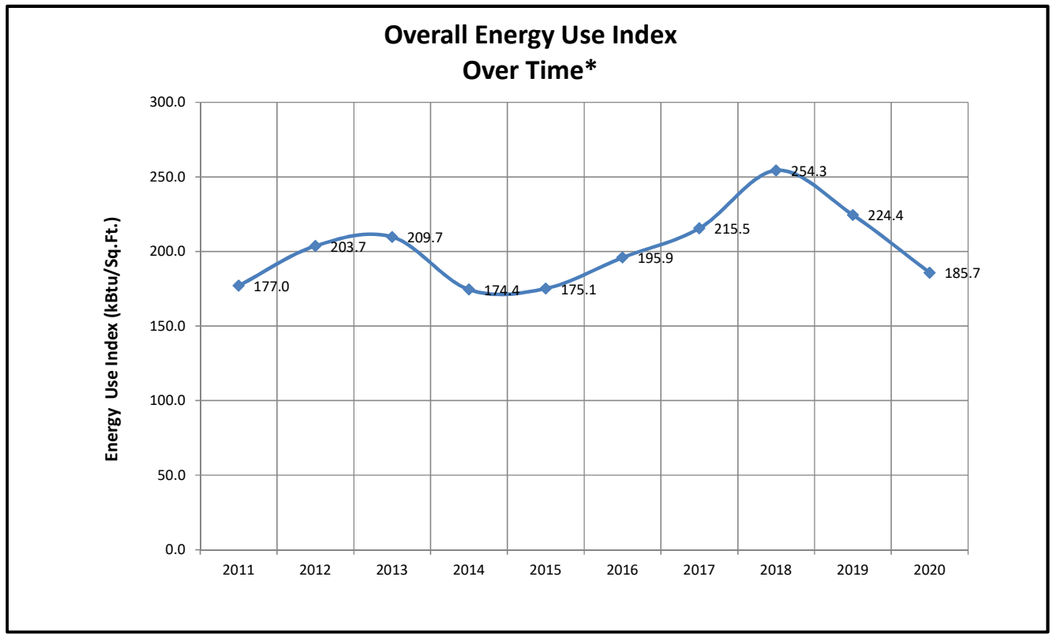
A.3: ARIS Energy Consumption & Cost Data

Summary of energy consumption and cost information entered into ARIS for State Agencies and the University of Alaska

Data is adjusted, as best as possible, to account for errors, missing information, etc.

Last Updated/Modified: December 2020

AGENCY	YEAR	SQ. FT. of FACILITIES ENTERED INTO ARIS	TOTAL ENERGY CONSUMPTION [kbtus]	ENERGY USE INDEX EUI [kbtu/S.F.]	EUI CHANGE [%]	TOTAL ENERGY COST ENTERED INTO ARIS	ENERGY COST INDEX ECI [$/S.F.]	ENERGY COST CHANGE [%]	ENERGY COST INDEX CHANGE [%]	*NOTE:*
TOTALS	2011	9,801,076	1,735,249,601	177.0		$ 31,693,376	$ 3.23			
TOTALS	2012	9,930,757	2,023,109,174	203.7		$ 34,620,688	$ 3.49	9%	8%	
TOTALS	2013	10,637,546	2,230,967,213	209.7	3%	$ 37,919,675	$ 3.56	10%	2%	
TOTALS	2014	14,856,588	2,591,644,406	174.4	-17%	$ 56,938,133	$ 3.83	50%	8%	
TOTALS	2015	13,290,792	2,327,872,455	175.1	0%	$ 45,028,166	$ 3.39	-21%	-12%	
TOTALS	2016	11,770,199	2,306,128,376	195.9	12%	$ 37,016,062	$ 3.14	-18%	-7%	
TOTALS	2017	11,136,118	2,399,849,023	215.5	10%	$ 35,741,164	$ 3.21	-3%	2%	
TOTALS	2018	9,888,038	2,514,701,305	254.3	18%	$ 33,781,404	$ 3.42	-5%	6%	
TOTALS	2019	10,069,212	2,259,940,440	224.4	-12%	$ 38,615,894	$ 3.84	14%	12%	
TOTALS	2020	9,848,495	1,828,737,860	185.7	-17%	$ 33,702,994	$ 3.42	-13%	-11%	*Not all 2020 data entered as of date, accounting for lower comparitive total energy consumption and cost.*



*Of data reported into ARIS.