Department of Commerce

State Project Improvement Grant

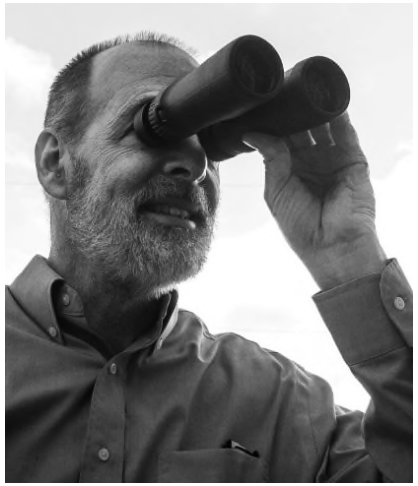
PART OF THE ENERGY EFFICIENCY AND SOLAR PROGRAM

Dever Haffner-Ratliffe
GRANT MANAGER

8/14/2019

Presenting Partners

Hanna Waterstrat
SEEP Director

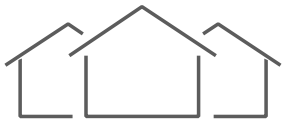


Chuck Murray
Efficiency Policy Specialist

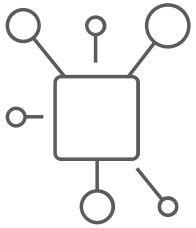
Jennifer Masterson
Senior Budget Assistant

Dever Haffner-Ratliffe
Grant Manager

We strengthen communities



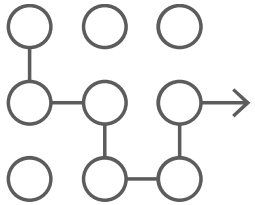
HOUSING / HOMELESSNESS



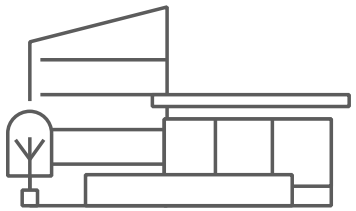
INFRASTRUCTURE

BUSINESS ASSISTANCE

ENERGY



PLANNING



COMMUNITY FACILITIES

CRIME VICTIMS / SAFETY

COMMUNITY SERVICE

Agenda

Part 1

Introduction to SEEP

EE&S Program Overview

About this Grant

Eligible Projects

Alternative Projects

Process and Timeline

How to Prepare

Project Examples

Phase 2 Preview

Questions

Part 2

Preparing a Project

The Life Cycle Cost Tool

Questions

State Efficiency & Environmental Performance

Electrified • *Zero GHG* • *Clean Energy* • *Toxic-free*

Transforming Transportation, Facilities, & Purchasing

Energy Efficiency and Solar Program

Solar
$3,465,810 Early 2021

Energy Efficiency
$1,731,450 Spring 2020
$1,731,450 Summer 2021

Available to Washington Public Entities:

- K-12 Public Schools
- Public Colleges and Universities
- Local Governments
- Municipalities, Districts, and Special Districts
- Tribal Governments
- Washington State Agencies and Institutions

Capital Budget Language

New Funding: Section 1039

(3) $5,357,000 is provided solely for the state efficiency and environmental performance improvements to minor works and stand-alone projects at state-owned facilities that repair or replace existing building systems including, but not limited to, HVAC, lighting, insulation, windows, and other mechanical systems. Eligibility for this funding is dependent on an analysis using the office of financial management's life-cycle cost tool that compares project design alternatives for initial and long-term cost-effectiveness. Assuming a reasonable return on investment, the department shall provide grants in the amount required to improve the project's energy efficiency compared to the original project request. Prior to awarding funds, the department shall submit to the office of financial management a list of all proposed awards for review and approval.

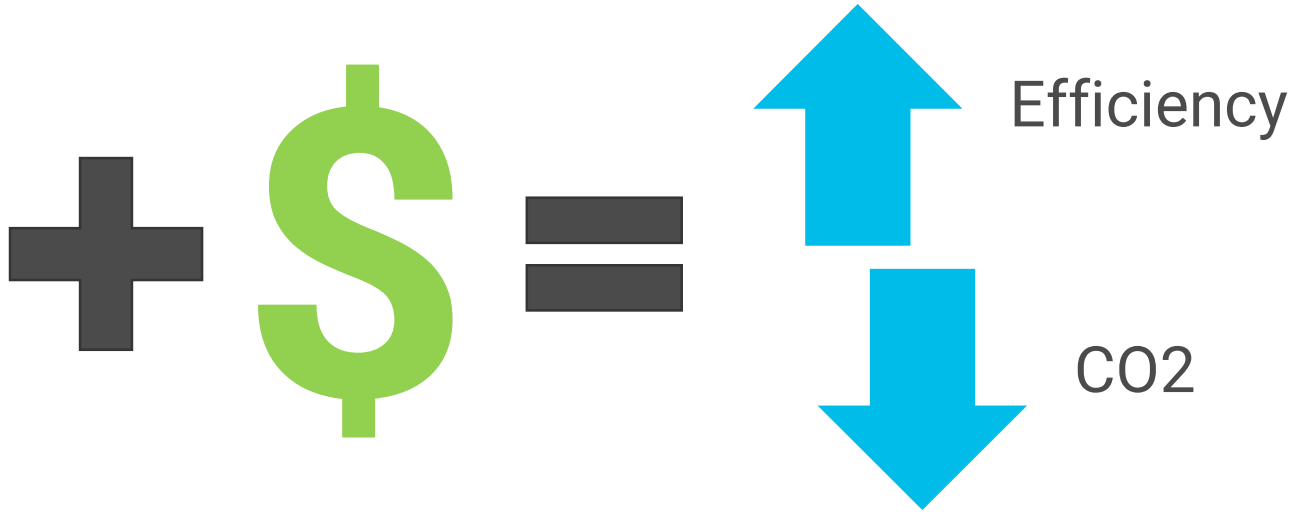
Re-appropriation Funding: Section 6007

(3) $1,400,000 is provided solely for energy efficiency improvements to minor works and stand-alone projects at state-owned facilities that repair or replace existing building systems including, but not limited to HVAC, lighting, insulation, windows, and other mechanical systems. Eligibility for this funding is dependent on an analysis using the office of financial management's life-cycle cost tool that compares project design alternatives for initial and long-term cost-effectiveness. Assuming a reasonable return on investment, the department shall provide grants in the amount required to improve the project's energy efficiency compared to the original project request Prior to awarding funds, the department of commerce shall submit to the office of financial management a list of all proposed awards for review and approval.

State Project Improvement (SPI) Grant

Previously known as the “Minor Works” Grant

- ✓State Owned Facilities
- ✓Repair or Replacing
- ✓Capital Funds



SPI Overview

Funding from 2017-2019 and 2019.

2nd time this has been offered.

$6,554,290 available for grants.

Grant will provide up to 100% of the baseline project cost.

If there is over subscription of the funds, grants will be ranked based on reductions in carbon emissions compared to baseline.

If any funding is left over, the intent is to award remaining funds on a first come first served basis.

Project Eligibility

Baseline or Base case

The Baseline Project Must:

- ✓ State Owned Facility
- ✓ Existing Capital Funding
- ✓ Be Fully Funded
- ✓ Repair or Replace an Existing System
- ✓ Meet Applicable Code Requirements

A baseline is not the existing Building

What is your baseline project?

Alternative Projects

What SPI will fund

- ✓ Expansion of Existing Scope
- ✓ Same Location
- ✓ Improves the Efficiency
- ✓ Energy Savings must Pay for additional cost over lifetime

Reduces CO_2 emissions

Process and Timeline

8/26 - Notice of Funding Opportunity
- Phase 1 Application

9/25 - Eligible applicants will be notified
- Phase 2 application available
- Commerce will provide detailed instructions

Successful Applicants Notified in February 2020!

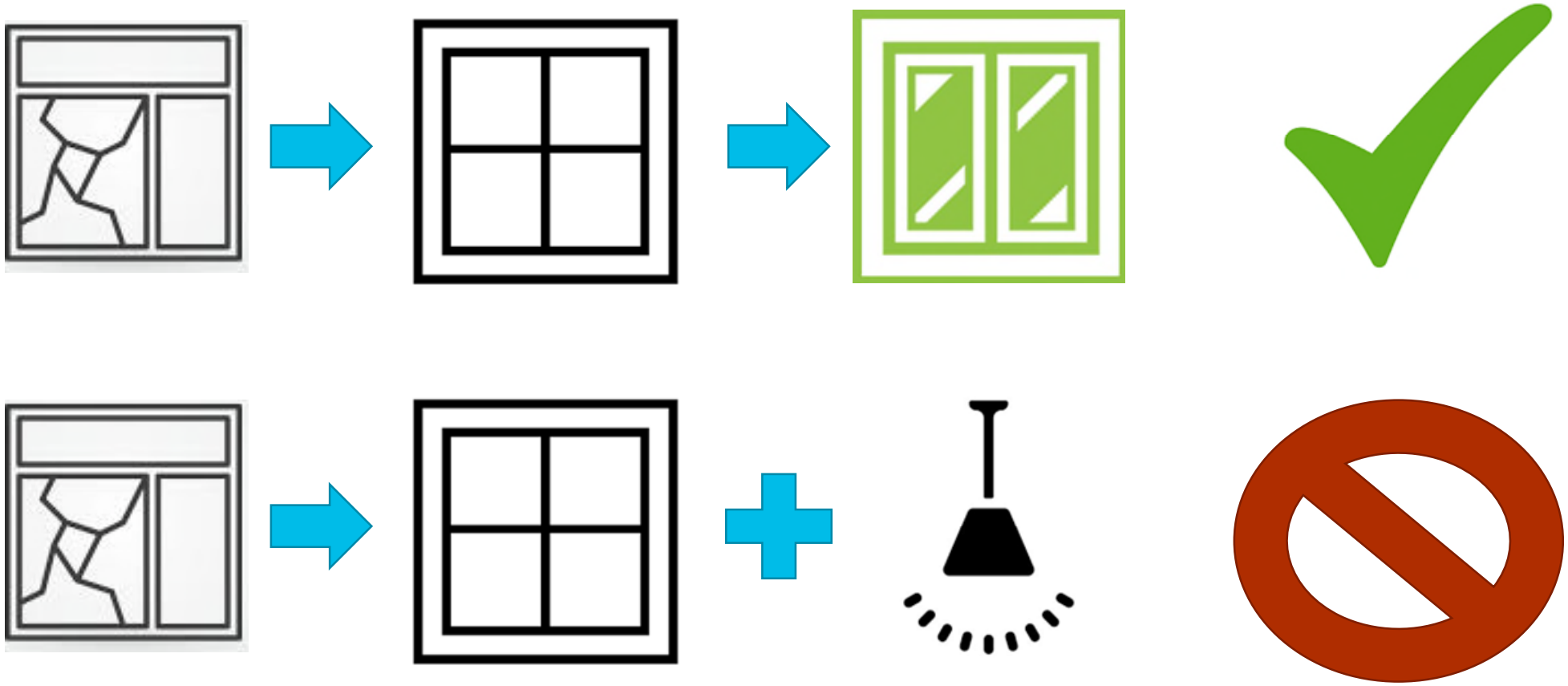
Preparing to Apply

Phase 1

Tell us about your baseline project and what you want to do to improve it.

- ✓ Identify an eligible baseline project (baseline)
- ✓ Research ways to increase the energy efficiency (alternative)
- ✓ Estimate the additional cost of the alternative
- ✓ Verify the utility incentives available
- ✓ Keep it simple – the application will be a couple of pages

Project Examples



Preparing to Apply

Phase 2

✓Eligible Phase 1 Applications will be informed

✓Commerce will provide detailed instructions

✓More research and development will be required

Questions?

Next: Part 2

Preparing a Project

The Life Cycle Cost Tool

Part 2

Preparing for the Phase 2 Application

Preparing a Project

The Life Cycle Cost Tool

The Mandatory Tool

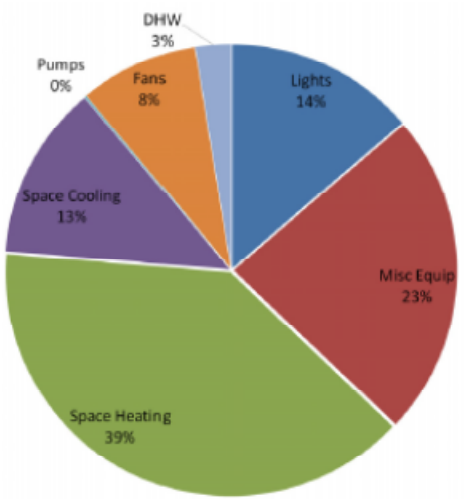
- Life Cycle Cost Tool (Excel) | Instructions
  - Introduction to the life cycle cost tool webinars
  - Life cycle cost tool training webinars
- Evaluation Life Cycle Cost Analysis Tool (Excel) | HVAC example
- https://www.ofm.wa.gov/budget/budget-instructions/budget-forms

Life cycle cost inputs

- Applies to the base case project and the SPI project
- Efficiency Measure
  - First cost
  - energy impact +/- (includes demand (KW) and energy (KWH, therms)
  - expected service life
  - First year service cost (repeated every year)
- Project Cost
  - One time upfront cost
  - Reoccurring annual cost

Energy Use Estimate – Existing Building

- Billing History
- Some idea how the existing building uses energy to assure final savings estimates are realistic



End Use	kWh	therms	kBTU	%
Lights	85,668		292,300	14%
Misc Equip	145,457		496,300	23%
Space Heating		8,336	833,600	39%
Space Cooling	78,605		268,200	13%
Pumps	645		2,200	0%
Fans	52,550		179,300	8%
DHW		547	54,700	3%
Total Estimated	**362,925**	**8,883**	**2,126,600**	**100%**
Historical Billing	**366,455**	**9,217**	**2,172,044**	
Percent of Actual	**99%**	**96%**	**98%**	
Total per sq ft	**11.9**	**0.3**	**69.5**	

Energy Use Estimates

- Simple
  - Utility Efficiency Program Estimate
  - Prescriptive results such as DEEMED measure savings or Prescriptive Worksheets
- Custom
  - Engineering Estimates
  - For example: Utility Custom Program, ESCO program or ASHRAE Level 2 audit protocols.

Energy Use Estimates for Custom Projects

- Existing Building
  - Utility billing data
    - energy consumption and demand
    - Cost of energy, demand and base fees
- Base Capital Project
  - Analysis of energy savings compared to the existing building
  - Savings are anticipated from meeting code and other project objectives
- SPI Project
  - Analysis of energy savings compared to the existing building

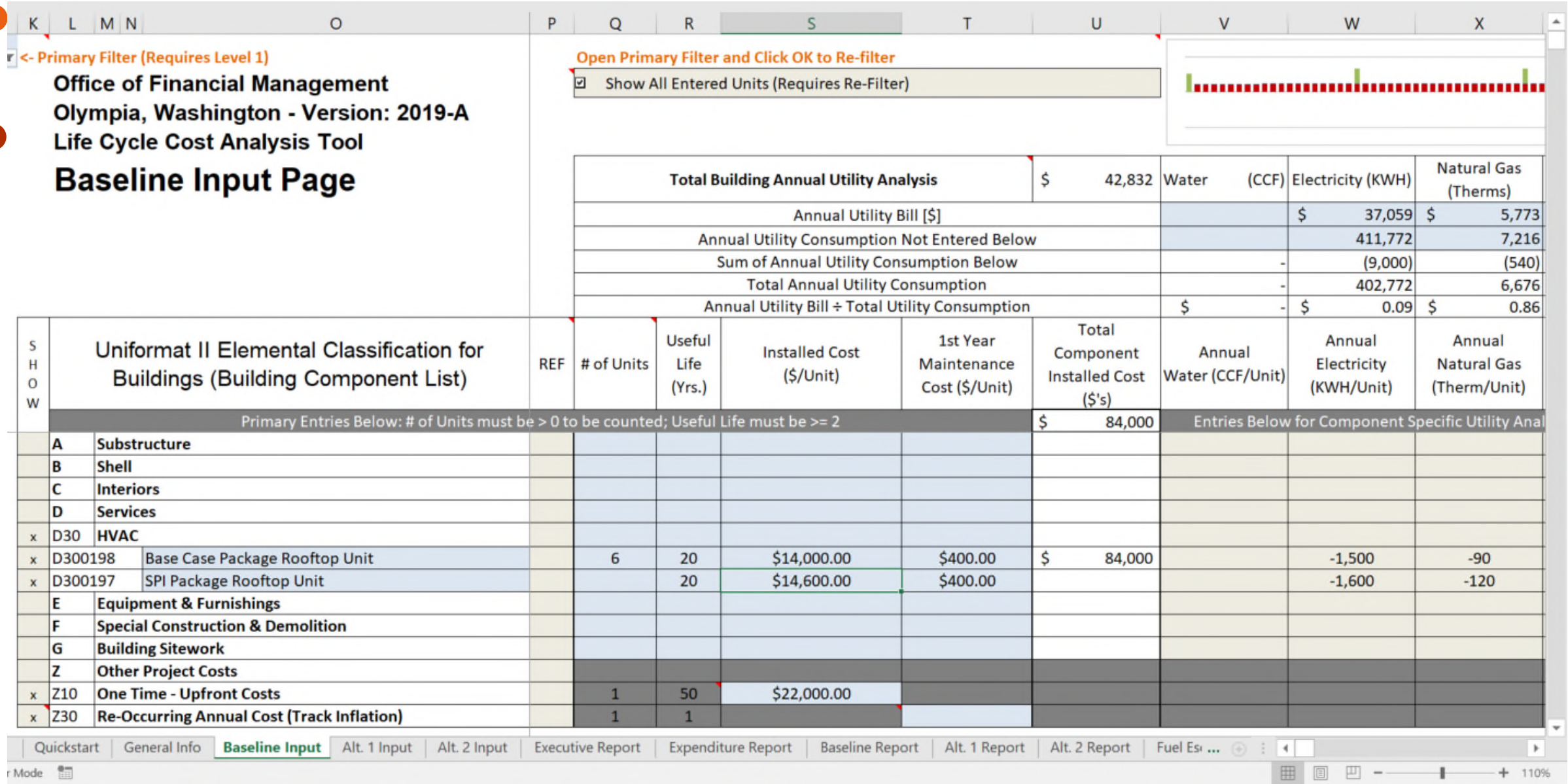
Base Case Energy Code Reminders

- For retrofits or equipment replacements, all the elements of the base case project are required to meet code. Basically any element of the building that is changed by the retrofit must meet code requirements.
- Code may require additional equipment and controls to be installed. For example, if the project replaces HVAC equipment that does not have an economizer, the replacement of equipment may require the addition of an economizer to meet code.
- Code includes scheduling, testing, balancing and commissioning activates. This work is part of the base case.
- A major renovation or change in occupancy type may trigger full code compliance for the building. It may not. Confirm with the local building official.
- The energy code will be updated shortly. Projects applying for permits after July 1, 2020 will be required to meet the 2018 edition of the energy code.

Measure Life

- Life cycle cost assessment must consider useful life
- This suggests a good level of detail in completing the life cycle cost tool
- BOMA *Preventive Maintenance Guidebook*
  - https://icap.sustainability.illinois.edu/files/projectupdate/2289/Project%20Lifespan%20Estimates.pdf

16. Coils—Fluid to Air	
a. Direct Expansion (refrigerant)	18
b. Water/Steam Heating	20
c. Cooling and Dehumidifying	12
d. Electric	12
17. Heat Exchangers	
a. Commercial—Shell and Tube	
i. Steam to Domestic Water	13
ii. Steam to Heating Water	20
26. Electric Motors	
a. Without Soft Start	18
b. With Soft Start	25
27. Motor Starters	
a. In Dry Noncorrosive Areas	25
b. In Wet or Corrosive Areas (cooling towers)	10
28. Electric Transformers	
a. Oil-Filled	30



<- Primary Filter (Requires Level 1)

Office of Financial Management
Olympia, Washington - Version: 2019-A
Life Cycle Cost Analysis Tool

Baseline Input Page

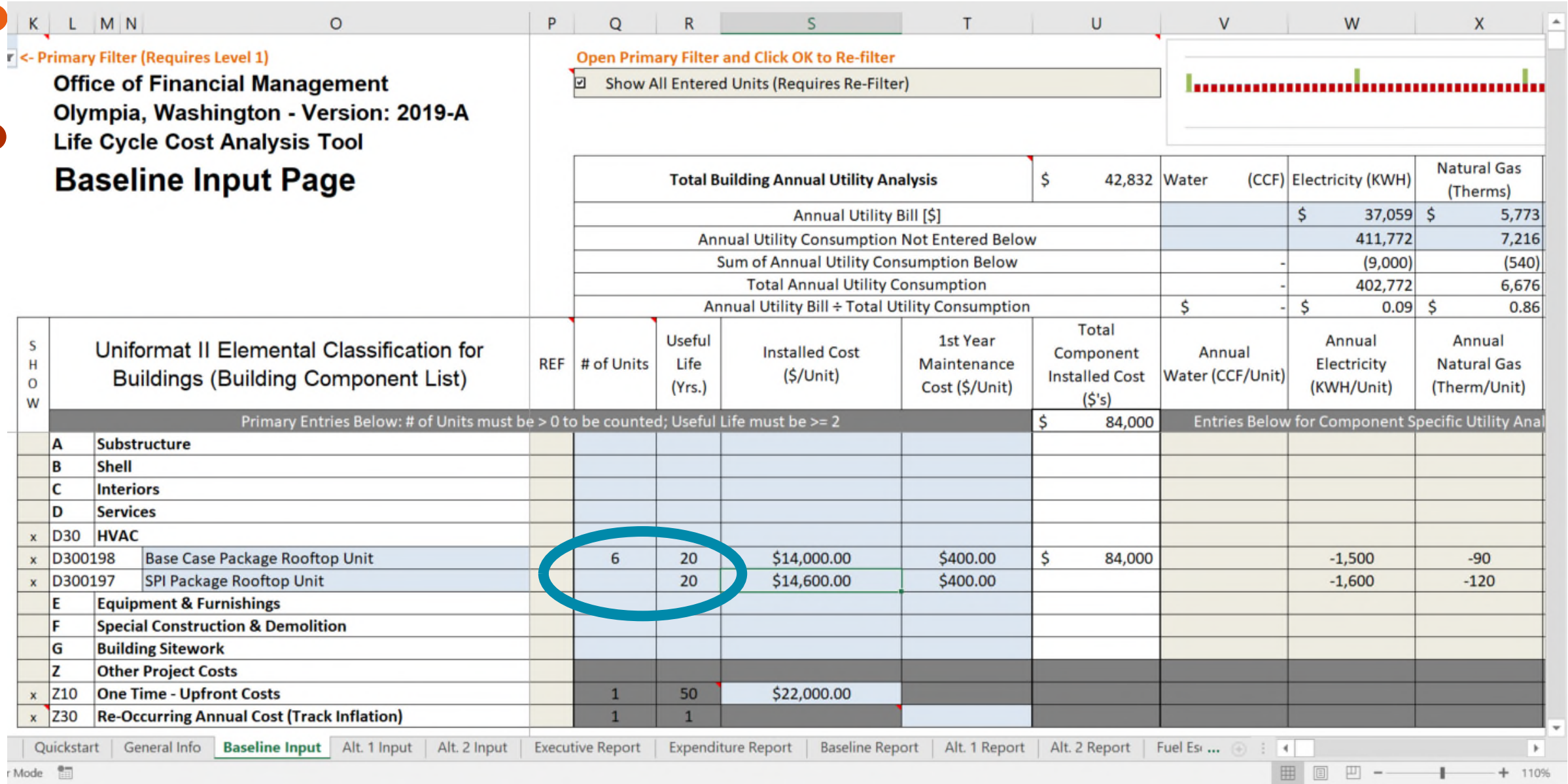
Open Primary Filter and Click OK to Re-filter

☑ Show All Entered Units (Requires Re-Filter)

Total Building Annual Utility Analysis	$ 42,832	Water (CCF)	Electricity (KWH)	Natural Gas (Therms)
Annual Utility Bill [$]			$ 37,059	$ 5,773
Annual Utility Consumption Not Entered Below			411,772	7,216
Sum of Annual Utility Consumption Below		-	(9,000)	(540)
Total Annual Utility Consumption		-	402,772	6,676
Annual Utility Bill ÷ Total Utility Consumption		$ -	$ 0.09	$ 0.86

SHOW	Uniformat II Elemental Classification for Buildings (Building Component List)		REF	# of Units	Useful Life (Yrs.)	Installed Cost ($/Unit)	1st Year Maintenance Cost ($/Unit)	Total Component Installed Cost ($'s)	Annual Water (CCF/Unit)	Annual Electricity (KWH/Unit)	Annual Natural Gas (Therm/Unit)
	Primary Entries Below: # of Units must be > 0 to be counted; Useful Life must be >= 2							$ 84,000	Entries Below for Component Specific Utility Anal		
	A	Substructure									
	B	Shell									
	C	Interiors									
	D	Services									
x	D30	HVAC									
x	D300198	Base Case Package Rooftop Unit		6	20	$14,000.00	$400.00	$ 84,000		-1,500	-90
x	D300197	SPI Package Rooftop Unit			20	$14,600.00	$400.00			-1,600	-120
	E	Equipment & Furnishings									
	F	Special Construction & Demolition									
	G	Building Sitework									
	Z	Other Project Costs									
x	Z10	One Time - Upfront Costs		1	50	$22,000.00					
x	Z30	Re-Occurring Annual Cost (Track Inflation)		1	1						

Quickstart | General Info | Baseline Input | Alt. 1 Input | Alt. 2 Input | Executive Report | Expenditure Report | Baseline Report | Alt. 1 Report | Alt. 2 Report | Fuel Es ...



<- Primary Filter (Requires Level 1)

Office of Financial Management
Olympia, Washington - Version: 2019-A
Life Cycle Cost Analysis Tool

Baseline Input Page

Open Primary Filter and Click OK to Re-filter

Show All Entered Units (Requires Re-Filter)

Total Building Annual Utility Analysis	$ 42,832	Water (CCF)	Electricity (KWH)	Natural Gas (Therms)
Annual Utility Bill [$]			$ 37,059	$ 5,773
Annual Utility Consumption Not Entered Below			411,772	7,216
Sum of Annual Utility Consumption Below		-	(9,000)	(540)
Total Annual Utility Consumption		-	402,772	6,676
Annual Utility Bill ÷ Total Utility Consumption		$ -	$ 0.09	$ 0.86

SHOW	Uniformat II Elemental Classification for Buildings (Building Component List)		REF	# of Units	Useful Life (Yrs.)	Installed Cost ($/Unit)	1st Year Maintenance Cost ($/Unit)	Total Component Installed Cost ($'s)	Annual Water (CCF/Unit)	Annual Electricity (KWH/Unit)	Annual Natural Gas (Therm/Unit)
	Primary Entries Below: # of Units must be > 0 to be counted; Useful Life must be >= 2							$ 84,000	Entries Below for Component Specific Utility Anal		
	A	Substructure									
	B	Shell									
	C	Interiors									
	D	Services									
x	D30	HVAC									
x	D300198	Base Case Package Rooftop Unit		6	20	$14,000.00	$400.00	$ 84,000		-1,500	-90
x	D300197	SPI Package Rooftop Unit			20	$14,600.00	$400.00			-1,600	-120
	E	Equipment & Furnishings									
	F	Special Construction & Demolition									
	G	Building Sitework									
	Z	Other Project Costs									
x	Z10	One Time - Upfront Costs		1	50	$22,000.00					
x	Z30	Re-Occurring Annual Cost (Track Inflation)		1	1						

Quickstart | General Info | Baseline Input | Alt. 1 Input | Alt. 2 Input | Executive Report | Expenditure Report | Baseline Report | Alt. 1 Report | Alt. 2 Report | Fuel Es ...

<- Primary Filter (Requires Level 1)

Office of Financial Management
Olympia, Washington - Version: 2019-A
Life Cycle Cost Analysis Tool
Alternative 1 Input Page

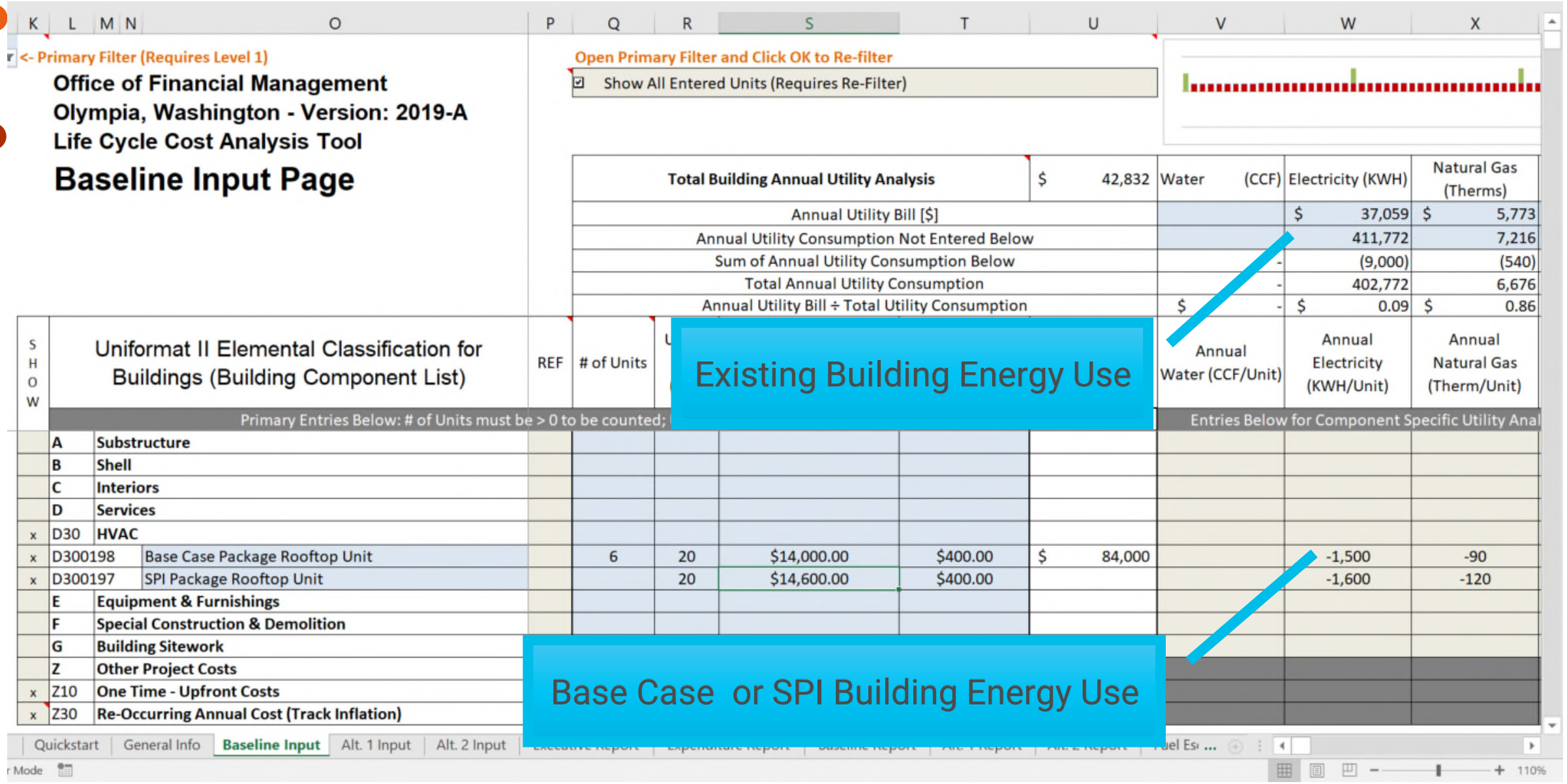
Open Primary Filter and Click OK to Re-filter

- ○ Manual Special Selection Only (Requires Refilter)
- ◉ Show Baseline Fields and Entered Units (Requires Refilter)
- ○ Show Differences Between Alternative and Baseline (Req. Refilter)

Total Building Annual Utility Analysis	$ 42,621	Water (CCF)	Electricity (KWH)	Natural Gas (Therms)
Annual Utility Bill [$]			$ 37,004	$ 5,617
Annual Utility Consumption Not Entered Below			411,772	7,216
Sum of Annual Utility Consumption Below		-	(9,600)	(720)
Total Annual Utility Consumption		-	402,172	6,496
Annual Utility Bill ÷ Total Utility Consumption		$ -	$ 0.09	$ 0.86

Note: No Units Assigned to a Component with Entries

SHOW	Uniformat II Elemental Classification for Buildings (Building Component List)		REF	# of Units	Useful Life (Yrs.)	Installed Cost ($/Unit)	1st Year Maintenance Cost ($/Unit)	Total Component Installed Cost ($'s)	Annual Water (CCF/Unit)	Annual Electricity (KWH/Unit)	Annual Natural Gas (Therm/Unit)
	Primary Entries Below: # of Units must be > 0 to be counted; Useful Life must be >= 2								Entries Below for Component Specific Utility Analy		
	Match Baseline: Filter to Select All & Drag Copy O14:S14 & U14:AG14							$ 87,600			
	A	Substructure									
	B	Shell									
	C	Interiors									
	D	Services									
	D30	HVAC									
	D300198	Base Case Package Rooftop Unit			20	$14,000.00	$400.00			-1500	-90
	D300197	SPI Package Rooftop Unit		6	20	$14,600.00	$400.00	$ 87,600		-1600	-120
	E	Equipment & Furnishings									
	F	Special Construction & Demolition									
	G	Building Sitework									
	Z	Other Project Costs									
	Z10	One Time - Unfront Costs		1	50	$22,000.00					


<- Primary Filter (Requires Level 1)
Office of Financial Management
Olympia, Washington - Version: 2019-A
Life Cycle Cost Analysis Tool
Baseline Input Page
Open Primary Filter and Click OK to Re-filter
Show All Entered Units (Requires Re-Filter)
Total Building Annual Utility Analysis
$ 42,832
Water (CCF)
Electricity (KWH)
Natural Gas (Therms)
Annual Utility Bill [$]
$ 37,059
$ 5,773
Annual Utility Consumption Not Entered Below
411,772
7,216
Sum of Annual Utility Consumption Below
(9,000)
(540)
Total Annual Utility Consumption
402,772
6,676
Annual Utility Bill ÷ Total Utility Consumption
$ 0.09
$ 0.86
Existing Building Energy Use
Uniformat II Elemental Classification for Buildings (Building Component List)
REF
# of Units
Annual Water (CCF/Unit)
Annual Electricity (KWH/Unit)
Annual Natural Gas (Therm/Unit)
Primary Entries Below: # of Units must be > 0 to be counted;
Entries Below for Component Specific Utility Ana
A Substructure
B Shell
C Interiors
D Services
x D30 HVAC
x D300198 Base Case Package Rooftop Unit 6 20 $14,000.00 $400.00 $ 84,000 -1,500 -90
x D300197 SPI Package Rooftop Unit 20 $14,600.00 $400.00 -1,600 -120
E Equipment & Furnishings
F Special Construction & Demolition
G Building Sitework
Z Other Project Costs
x Z10 One Time - Upfront Costs
x Z30 Re-Occurring Annual Cost (Track Inflation)
Base Case or SPI Building Energy Use
Quickstart
General Info
Baseline Input
Alt. 1 Input
Alt. 2 Input
110%

Key Analysis Variables		Building Characteristics	
Study Period (years)	50	Gross (Sq.Ft)	42,000
Nominal Discount Rate	3.46%	Useable (Sq.Ft)	42,000
Maintenance Escalation	1.00%	Space Efficiency	100.0%
Zero Year (Current Year)	2020	Project Phase	0
Construction Years	0	Building Type	0

Life Cycle Cost Analysis		BEST	
Alternative	Baseline	Alt. 1	Alt. 2
Energy Use Intenstity (kBtu/sq.ft)	48.6	48.1	48.1
1st Construction Costs	$ 106,000	$ 109,600	$ 109,600
PV of Capital Costs	$ 219,667	$ 228,139	$ 228,139
PV of Maintenance Costs	$ 117,113	$ 117,113	$ 117,113
PV of Utility Costs	$ 2,086,837	$ 2,074,652	$ 2,086,837
Total Life Cycle Cost (LCC)	**$ 2,423,617**	**$ 2,419,903**	**$ 2,432,089**
Net Present Savings (NPS)	**N/A**	**$ 3,714**	**$ (8,471)**

Societal LCC takes into consideration the social cost of carbon dioxide emissions caused by operational energy consumption

(GHG) Social Life Cycle Cost		BEST	
GHG Impact from Utility Consumption	Baseline	Alt. 1	Alt. 2
Tons of CO2e over Study Period	10,067	10,007	10,007
% CO2e Reduction vs. Baseline	N/A	1%	1%
Present Social Cost of Carbon (SCC)	$ 930,662	$ 925,100	$ 925,100
Total LCC with SCC	**$ 3,354,279**	**$ 3,345,004**	**$ 3,357,189**
NPS with SCC	**N/A**	**$ 9,276**	**$ (2,910)**

Key Analysis Variables		Building Characteristics	
Study Period (years)	50	Gross (Sq.Ft)	42,000
Nominal Discount Rate	3.46%	Useable (Sq.Ft)	42,000
Maintenance Escalation	1.00%	Space Efficiency	100.0%
Zero Year (Current Year)	2020	Project Phase	0
Construction Years	0	Building Type	0

Life Cycle Cost Analysis		BEST	
Alternative	Baseline	Alt. 1	Alt. 2
		48.1	48.1
	10[illegible],000	$ 109,600	$ 109,600
	219,66[illegible]	$ 228,139	$ 228,139
PV of Maintenance Costs	$ 117,113	$ 117,113	$ 117,113
PV of Utility Costs	$ 2,086,837	$ 2,074,652	$ 2,086,837
Total Life Cycle Cost (LCC)	**$ 2,423,617**	**$ 2,419,903**	**$ 2,432,089**
Net Present Savings (NPS)	**N/A**	**$ 3,714**	**$ (8,471)**

NPS for the alternate is positive

Societal LCC takes into consideration the social cost of carbon dioxide emissions caused by operational energy consumption

	BEST		
	[illegible]ne	Alt. 1	Alt. 2
	10,067	10,007	10,007
% CO2e Reduction vs. Baseline	N/A	1%	1%
Present Social Cost of Carbon (SCC)	$ 930,662	$ 925,100	$ 925,100
Total LCC with SCC	**$ 3,354,279**	**$ 3,345,004**	**$ 3,357,189**
NPS with SCC	**N/A**	**$ 9,276**	**$ (2,910)**

CO2e reduction vs baseline is 1%

Questions?

Thank you!

Program/Grant Questions:

DEVER HAFFNER-RATLIFFE

Email: EEandS@commerce.wa.gov

Phone: 360-522-3610

SEEP Office Questions:

HANNA WATERSTRAT

Email: Hanna.Waterstrat@commerce.wa.gov

Phone: (360) 764-0015

Capital Budget Questions

JENNIFER MASTERSON

Email: jennifer.masterson@ofm.wa.gov

Phone: (360) 902-0579

Department of Commerce

www.commerce.wa.gov