Proposed Washington State Version 3.2 Program Requirements

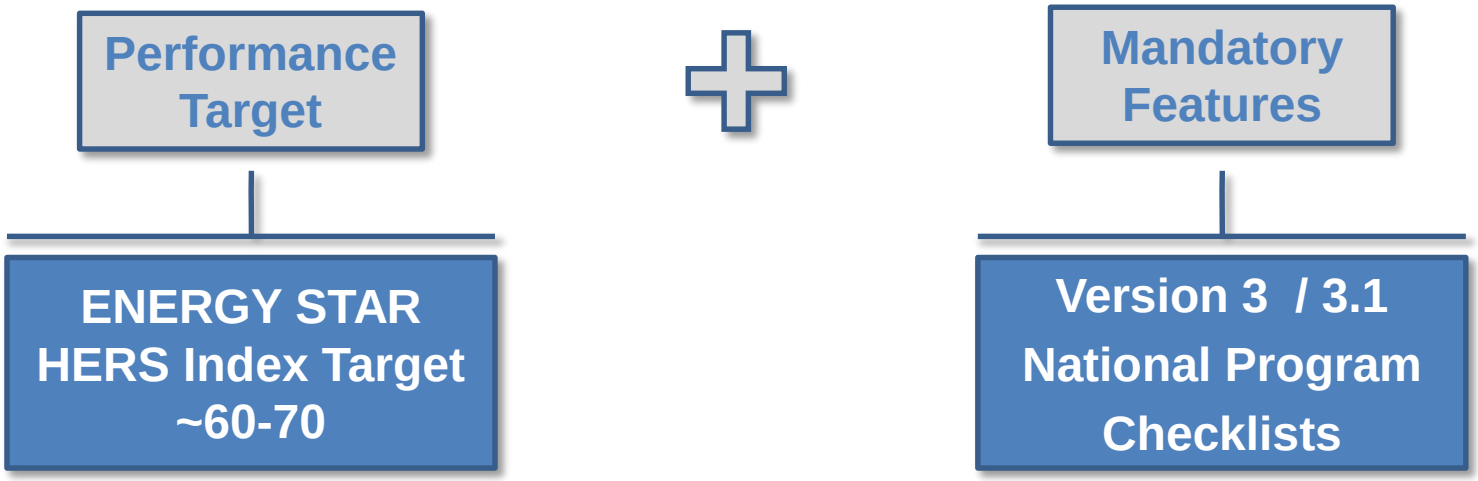
October 16th, 2017

Agenda

- Current WA ENERGY STAR program requirements.
- WA code activity.
- ENERGY STAR response to WA code activity.
- Proposed WA v3.2 ENERGY STAR program requirements.
- Comment Period.
- BetterBuiltNW Resources.
- Q&A.

Current WA ENERGY STAR Program Requirements

- Currently implementing National Version 3.1
  - Required for homes permitted on or after 01/01/2016



WA Code Activity

- New Washington code went into effect on 07/1/2016.
- Based on the 2015 IECC, but increases stringency by requiring additional features from a menu of options.
- Examples of options include:
  - Improved thermal envelope
  - High efficiency heating/cooling equipment
  - High efficiency water heating
  - Ducts in conditioned space
- Because new WA code is more efficient, EPA needs to develop WA v3.2 to maintain meaningful savings.

ENERGY STAR Response to WA Code Activity

- Because there are multiple code compliance options, we first needed to define a single configuration. Savings could then be estimated relative to this baseline.
- To do so, we selected the options we believe builders are most likely to select for a single-family home:
  - Thermal envelope improvement (5% UA improvement)
  - Low flow showerheads and faucets
  - High efficiency space heating (94 AFUE / 9 HSPF)
  - High efficiency water heating (0.91 EF gas / 2.0 electric)
- Using this code-compliant baseline, we developed a new ENERGY STAR Reference Design that is ≥10% better..

Proposed WA Version 3.2 Program Reqs. – CZ 5

Climate Zone 5	WA 2015 Code w/ Points Applied	ES v3.1	WA v3.2
Thermal Envelope			
Wall Insulation	R-21	R-20	R-21
Ceiling Insulation	R-49	R-49	R-49
Floor Insulation	R-38*	R-30	R-38
Basement Wall Insulation	R-21	R-13	R-21
Slab edge insulation	R-10 perimeter & under slab*	R-10 2 ft	R-10 perimeter & under slab*
Insulation Grade	Walls Grade III; All others Grade II	All Grade I	All Grade I
Infiltration (ACH50)	5	3	3
Window U-factor	0.28*	0.27	0.27
Window SHGC	0.40	Any	0.30
Door R-value	3.6	5.9	5.9
HVAC			
AFUE / SEER	94 / 13*	95 / 13	95 / 13
HSPF / SEER	9 / 14*	9.25 / 15	9.5 / 15
DHW EF (gas) 40 gal	0.91*	0.61	0.91
DHW EF (elec) 40 gal	2.0*	0.93	2.5
DHW flow rating	Low-flow*	Standard	Low-flow
DHW pipe insulation	R-3	None	R-3
Duct Location	Any	Conditioned Space	Any
Duct Insulation	R-8	N/A	R-8
Duct leakage	4 CFA	0 CFA	4 CFA
Other			
Appliances	-	ES	ES
High-efficacy Lighting	75%	90%	90%

Proposed WA Version 3.2 Program Reqs. – CZ 6

Climate Zone 6	WA 2015 Code w/ Points Applied	ES v3.1	WA v3.2
Thermal Envelope			
Wall Insulation	R-21	R-20	R-21
Ceiling Insulation	R-49	R-49	R-49
Floor Insulation	R-38*	R-30	R-38
Basement Wall Insulation	R-21	R-19	R-21
Slab edge insulation	R-10 perimeter & under slab*	R-10 4 ft	R-10 perimeter & under slab*
Insulation Grade	Walls Grade III; All others Grade II	All Grade I	All Grade I
Infiltration (ACH50)	5	3	3
Window U-factor	0.28*	0.27	0.27
Window SHGC	0.40	Any	0.30
Door R-value	3.6	5.9	5.9
HVAC			
AFUE / SEER	94 / 13*	95 / 13	95 / 13
HSPF / SEER	9 / 14*	9.5 / 15	9.5 / 15
DHW EF (gas) 40 gal	0.91*	0.61	0.91
DHW EF (elec) 40 gal	2.0*	0.93	2.0
DHW flow rating	Low-flow*	Standard	Low-flow
DHW pipe insulation	R-3	None	R-3
Duct Location	Any	Conditioned Space	Any
Duct Insulation	R-8	N/A	R-8
Duct leakage	4 CFA	0 CFA	4 CFA
Other			
Appliances	-	ES	ES
High-efficacy Lighting	75%	90%	90%

Proposed WA Version 3.2 Sample HERS Index Targets

- Sample HERS index targets for 2-story, single-family homes modeled in climate zones 5 & 6.

Fuel Type	City	Climate Zone	HERS Score v3.1	HERS Score v3.2	Delta
Gas	Seattle, WA	5	69	61	-8
Gas	Spokane, WA	5	63	57	-6
Gas	Kalispell, MT	6	61	57	-4
Elec.	Seattle, WA	5	73	64	-9
Elec.	Spokane, WA	5	67	62	-5
Elec.	Kalispell, MT	6	66	64	-2

Proposed WA Version 3.2 Cost-Effectiveness

- Cost-effectiveness results, REM Rate v15.4:

				WA 2015		Proposed WA v3.2 Program Requirements				
CZ	Location	Found. Type	HVAC Equipment Type	Annual Utility Costs	Annual Utility Costs	Annual Utility Savings		Total Upgrade Cost	Monthly Utility Savings	Monthly Mortgage Upgrade Cost	Net Cash Flow
5	Spokane	Bsmt	Gas Furnace / Elec. AC	$1,715	$1,497	$217	13%	$1,490	$18	$8	$10
5	Spokane	Bsmt	ASHP	$2,204	$1,840	$365	17%	$2,121	$30	$11	$19
5	Seattle	Bsmt	Gas Furnace / Elec. AC	$1,407	$1,245	$162	12%	$1,490	$13	$8	$5
5	Seattle	Bsmt	ASHP	$1,624	$1,394	$230	14%	$2,121	$19	$11	$8
6	Kalispell, MT	Bsmt	Gas Furnace / Elec. AC	$1,820	$1,591	$229	13%	$1,490	$19	$8	$11
6	Kalispell, MT	Bsmt	ASHP	$2,594	$2,200	$394	15%	$1,835	$33	$10	$23
5/6	Weighted Average	Bsmt	All	$1,601	$1,391	$210	13%	$1,710	$17	$9	$8

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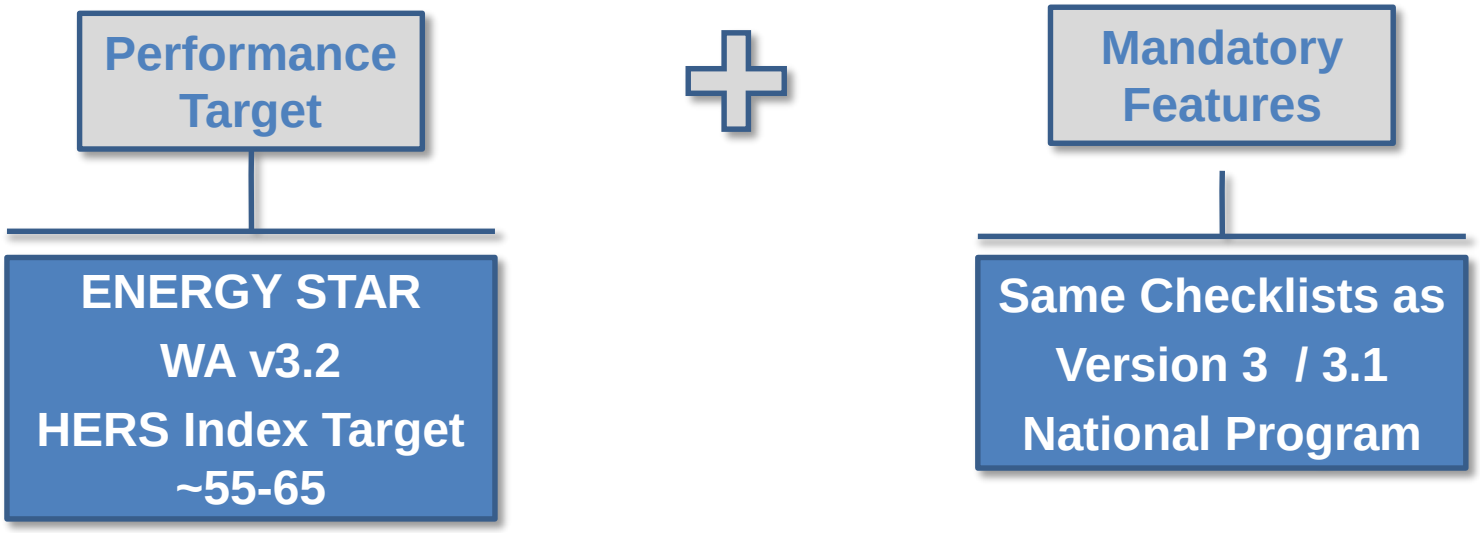

Proposed WA Version 3.2 Implementation Timeline

- Proposing that WA v3.2 be enforced for homes permitted on or after July 1, 2018.
- Working with HERS software vendors to incorporate new ENERGY STAR Reference Design.
- Expect that updated REM/Rate software will be released late 2017 / early 2018.

BetterBuiltNW and REM/Rate Utility Savings

- Partners can use REM/Rate to generate utility-grade savings and possibly be eligible for incentives.

- Learn more at the BetterBuilt website:
  - https://betterbuiltnw.com/resources

- BetterBuiltNW provides guidance on REM/Rate modeling, the User-Defined Reference Home for utility savings, integration with Axis, details on various incentive programs.

Comment Period Timeline and Next Steps

- Draft program requirements have been posted to: www.energystar.gov/northwesthomes
- Comment period begins today and will end on Friday October 27th, 2018.
- Visit webpage to download comment form.
- If there are only minimal or positive comments, documents could be finalized a few weeks after the comment period ends.

ENERGY STAR Certified Homes

Web:

Main: www.energystar.gov/newhomespartners
Technical: www.energystar.gov/newhomesguidelines
Training: www.energystar.gov/newhomestraining
HVAC: www.energystar.gov/newhomesHVAC

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