



Pilot Verification Program for Selected ENERGY STAR Products

August 24, 2010

Richard Karney, P.E.

Department of Energy
Energy Efficiency and Renewable energy
Richard.Karney@ee.doe.gov

- 1» Background**
- 2» Program Overview**
- 3» Testing Process**
- 4» Results – Progress to Date**
- 5» Lessons Learned**



1» **Background**

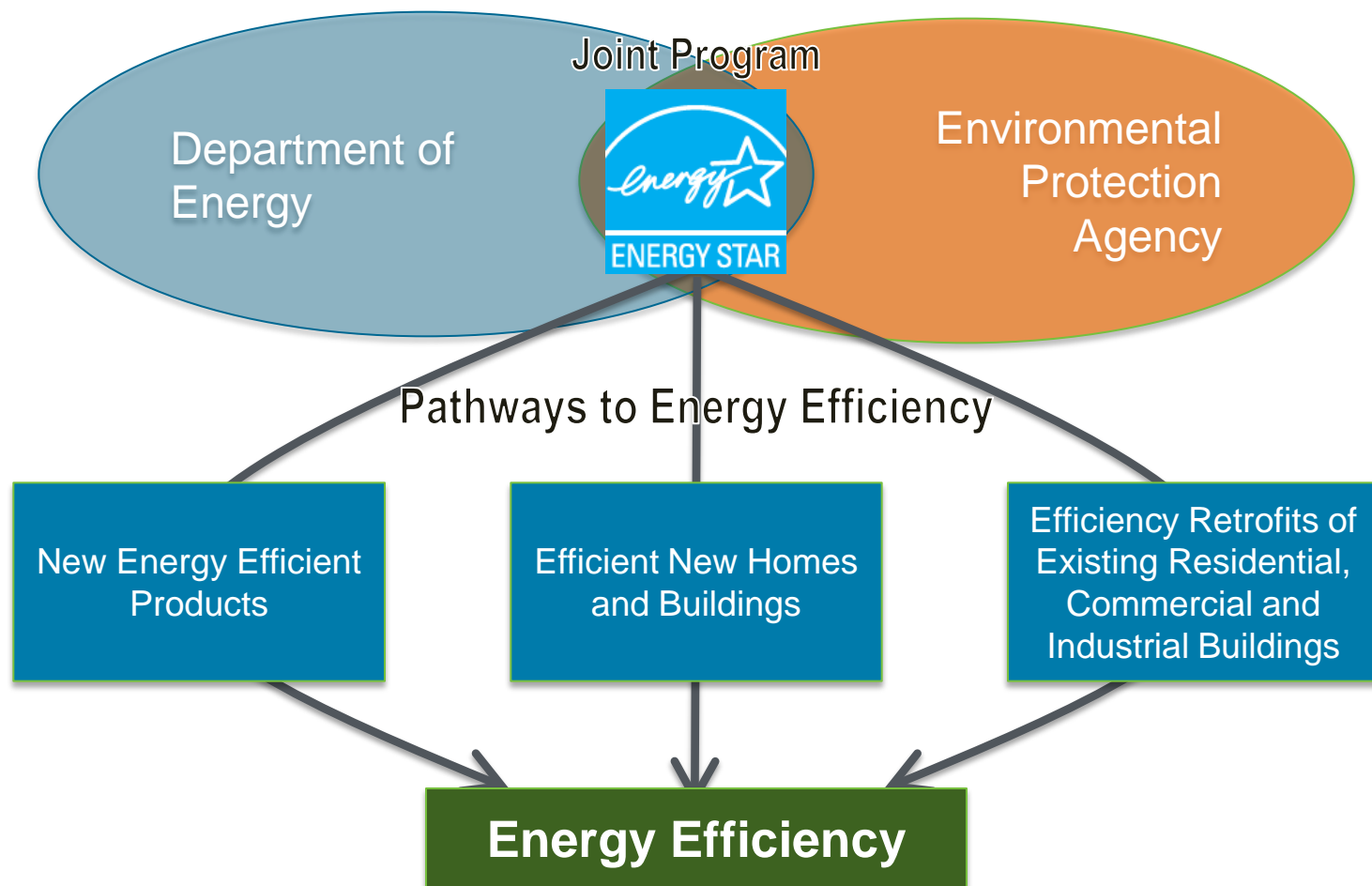
2» Program Overview

3» Testing Process

4» Results – Progress to date

5» Lessons Learned

Through ENERGY STAR® and associated public-private partnerships, the U.S. Government drives technological advances in energy efficiency.



Several recent events convinced the DOE to act now to bolster verification processes within the ENERGY STAR program.

- Recent publications raised questions about the energy (and water) performance of certain products
- Government Accountability Office (GAO) Report indicated vulnerability to “Fraud and Abuse”**
- Support needed for the State Energy Efficiency Appliance Rebate Program (SEEARP)

**ENERGY STAR Program: Covert Testing Shows the ENERGY STAR Program Certification Process Is Vulnerable to Fraud and Abuse, March 5 2010.
<http://www.gao.gov/products/GAO-10-470>

SEEARP leverages \$300 million in ARRA funds to help states offer rebates on certain ENERGY STAR appliances.

State Energy Efficient Appliance Rebate Program (SEEARP)

- Drives energy savings
- Stimulates economy by encouraging consumers to replace old appliances with new ENERGY STAR models

Appliance Rebate Product	# of States offering Rebate
Clothes Washers	47
Refrigerators	44
Dishwashers	35
Room Air Conditioners	28
Freezers	26
Gas Tankless Water Heaters	25
Furnaces	25
Gas Storage Water Heaters	22
Electric Heat Pump Water Heaters	22
Central AC/ Air Source Heat Pumps	20
Solar Water Heaters	16
Boilers	14
Gas Condensing Water Heaters	13
Geothermal Heat Pumps	5

The ENERGY STAR Verification Program will benefit from, and also enhance, a number of additional DOE programs.

- **DOE Lab Accreditation Program**
 - Will insure labs conduct tests as per federal test procedures
 - Will assist ENERGY STAR program by accelerating test lab selection in the future
- **DOE Lab Round-Robin Testing**
 - Test labs used in ENERGY STAR program will participate in round robin testing
- **DOE Accelerated Test Procedure Development**
 - ENERGY STAR program will identify gaps in test procedures and create/revise procedures
- **DOE Energy Conservation Standards Rulemakings**
 - Provides minimum performance requirements on available units

1» Background



2» Program Overview

3» Testing Process

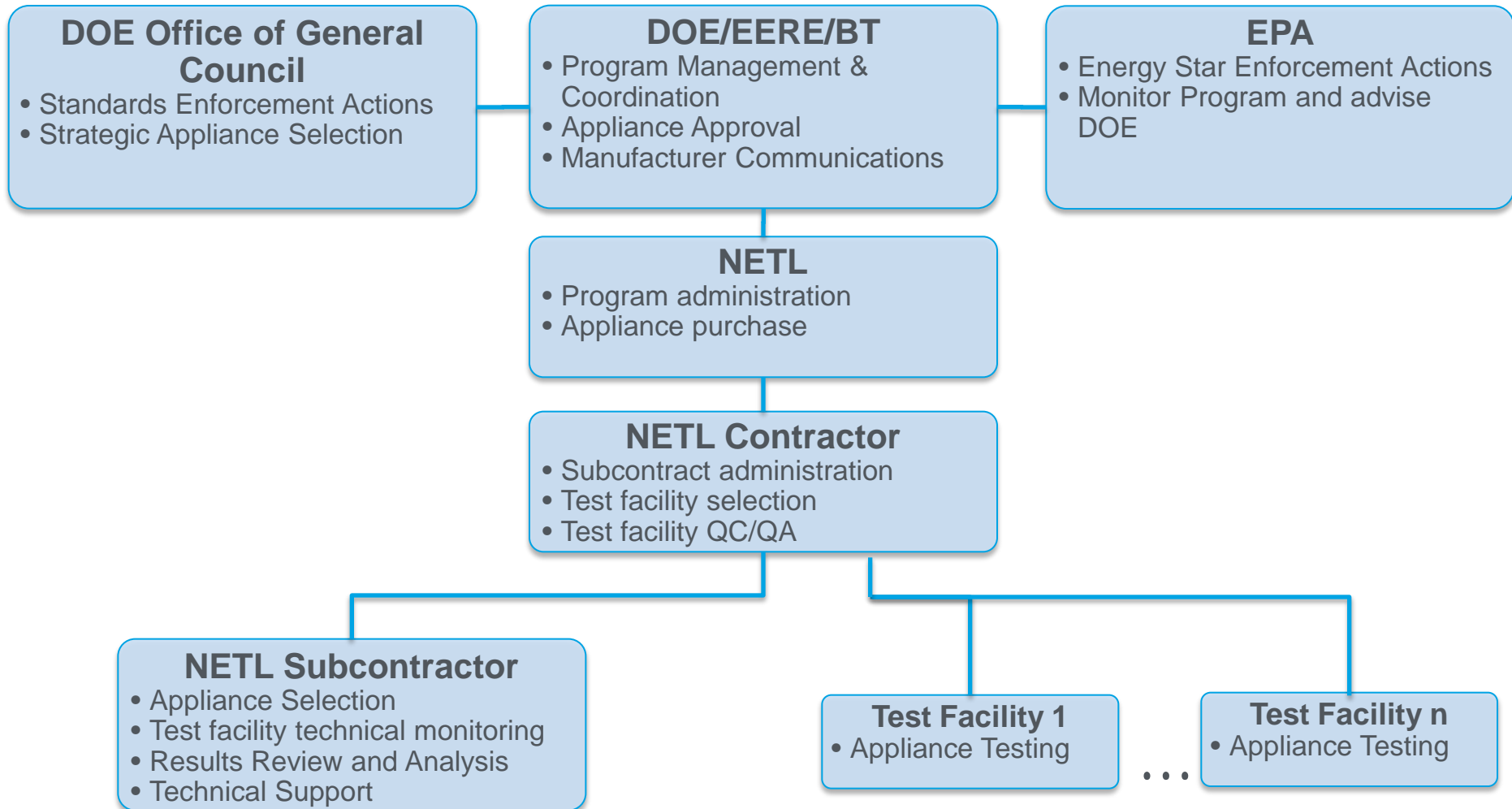
4» Results – Progress to date

5» Lessons Learned

Objective: Conduct a pilot testing program to ensure ENERGY STAR products meet the program requirements.

Related Goals:

- Maintain integrity of the ENERGY STAR label and consumer trust
- Help ensure consumers and the nation achieve expected energy (and water) savings
- Help ensure no manufacturer gains an unfair competitive advantage by misrepresenting the energy (and water) performance of its ENERGY STAR-labeled products
- Establish the foundation for a future extended verification program



1» Background

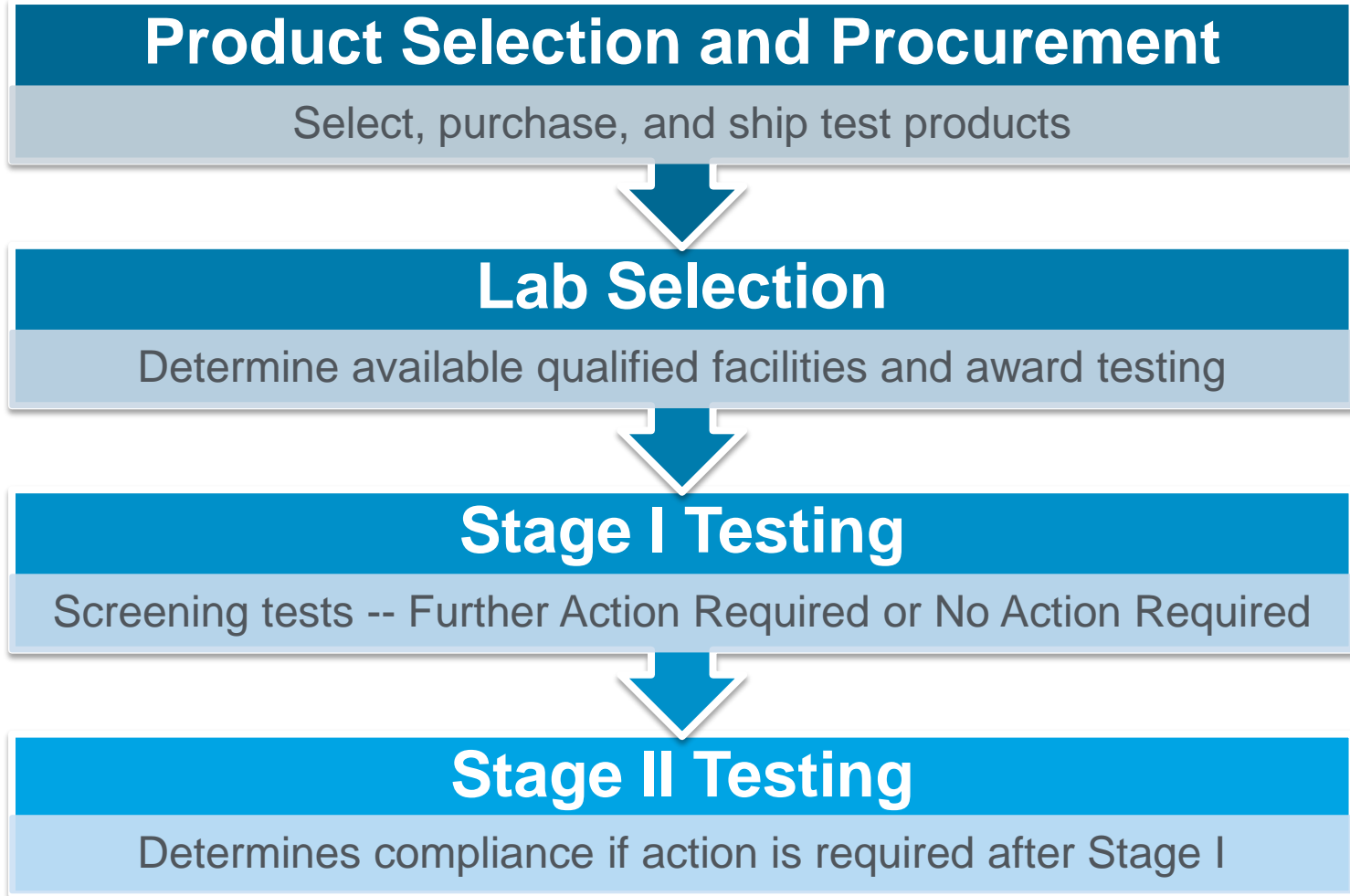
2» Program Overview



3» Testing Process

4» Results – Progress to date

5» Lessons Learned



DOE targeted testing 20% of basic models for selected ENERGY-STAR appliance types.

ENERGY STAR Product Category	Estimated Number of Basic Models¹	Target Number to Test
Refrigerators ²	405	82
Freezers ²	121	26
Clothes Washers	200	40
Dishwashers	54	11
Tankless Water Heaters	59	12
Storage Water Heaters	55	11
Room Air Conditioners	398	80

¹A basic model includes all variations of a unit made by a manufacturer that have the same energy-use characteristics.

²DOE subdivided the selection of refrigerators and freezers based on Product Class shipment data.

DOE randomly selected models for testing, and then modified the selection based on strategic considerations.

- The NETL Contractor used a procedure for random basic model selection
- The NETL Contractor omitted any basic models that were not available for sale through normal retail distribution channels, and selected a replacement
 - Certain basic models were discontinued before NETL could purchase the unit
- DOE modified the selection based on strategic considerations (added about 10 basic models)

The NETL Contractor selected test laboratories based on a number of criteria.

- Independent and not affiliated with appliance manufacturers
 - Ensure the testing is conducted in an unbiased manner
- Located in the United States or Canada
 - Minimizes shipping cost and facilitates test setup inspections
- Experienced in conducting the program specific tests
 - Ensure speed and reliability
- Generally recognized as a credible source for appliance testing services
- Able to meet schedule requirements at a competitive cost
- Acceptable quality control and quality assurance procedures

Four test facilities met the requirements for various products.

BR Laboratories, Inc.

- Refrigerators/freezers, dishwashers, residential clothes washers, room air conditioners, water heaters

CSA International (Toronto) and CSA OnSpeX (Cleveland)

- Refrigerator/freezers, dishwashers, residential clothes washers, water heaters

Intertek Testing Services

- Refrigerator/freezers, dishwashers, room air conditioners, water heaters

Springboard Engineering

- Residential clothes washers

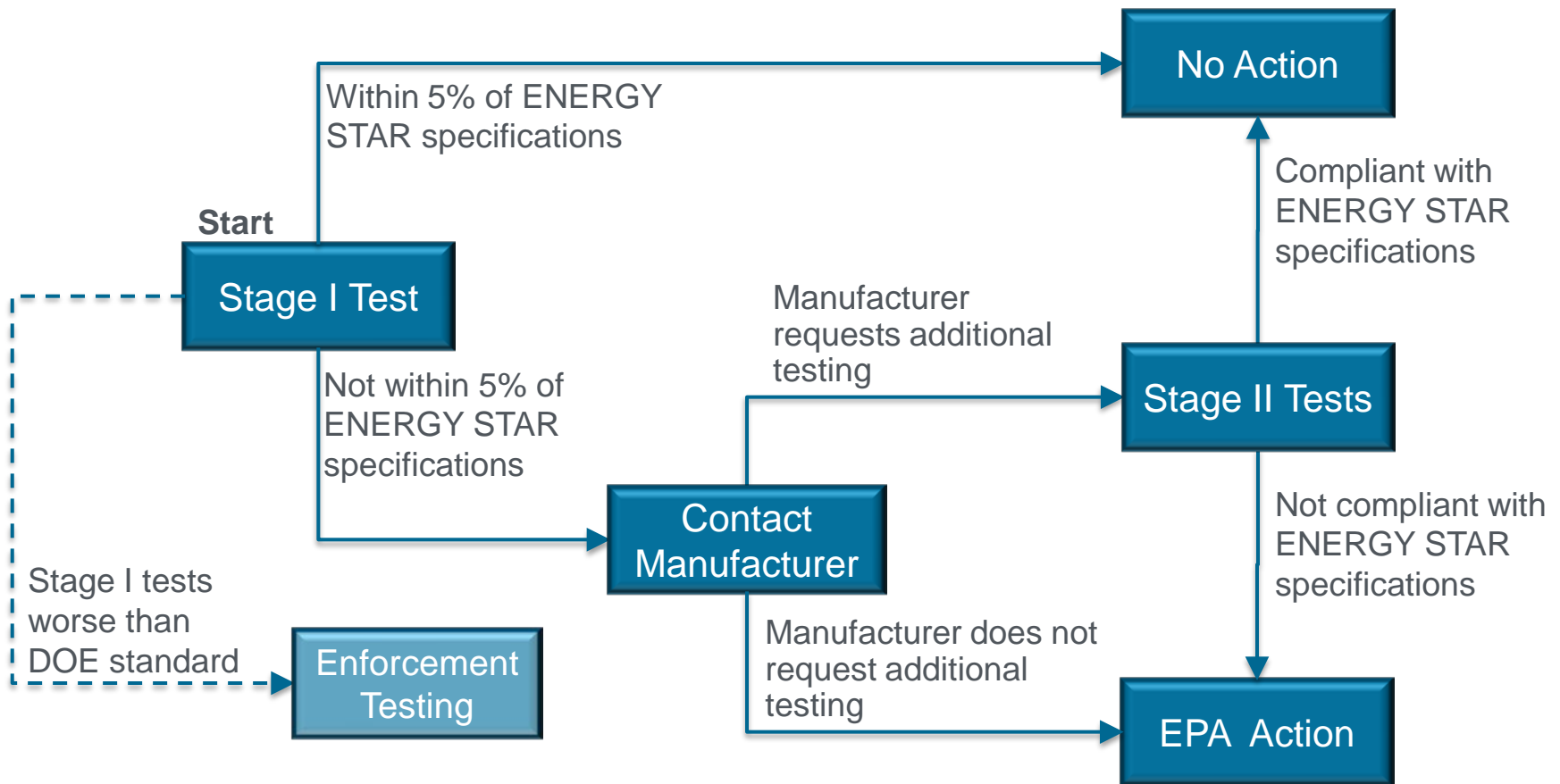
Representatives from NETL and the NETL Contractor conducted site visits to each qualified test lab to confirm appropriate test facilities.

We apportioned testing assignments to achieve the optimum overall schedule, while maintaining a competitive price.

Number of Tests by Lab and Appliance

Testing Lab	Refrigerator	Freezer	Clothes Washer	Dish-washer	Tankless Water Heater	Storage Water Heater	Room Air Conditioner
BR Labs	61	-	16	-	-	-	-
CSA	21	6	-	11	12	11	-
Intertek	-	18	-	-	-	-	87
Springboard	-	-	24	-	-	-	-
Total	82	24	40	11	12	11	87

The process begins with a Stage I test, then proceeds to a Stage II test, if warranted.



What about products not requiring further action?

- Information on these performing within 5% or greater of ENERGY STAR program requirements will not be released.
- Previous experience with PEARL testing on CFLs provided an unfair market advantage to lamps meeting ENERGY STAR program requirements.

- 1 » Background
- 2» Program Overview
- 3» Testing Process
- 4» Results – Progress to date**
- 5» Lessons Learned

Interim Results (Stage I)

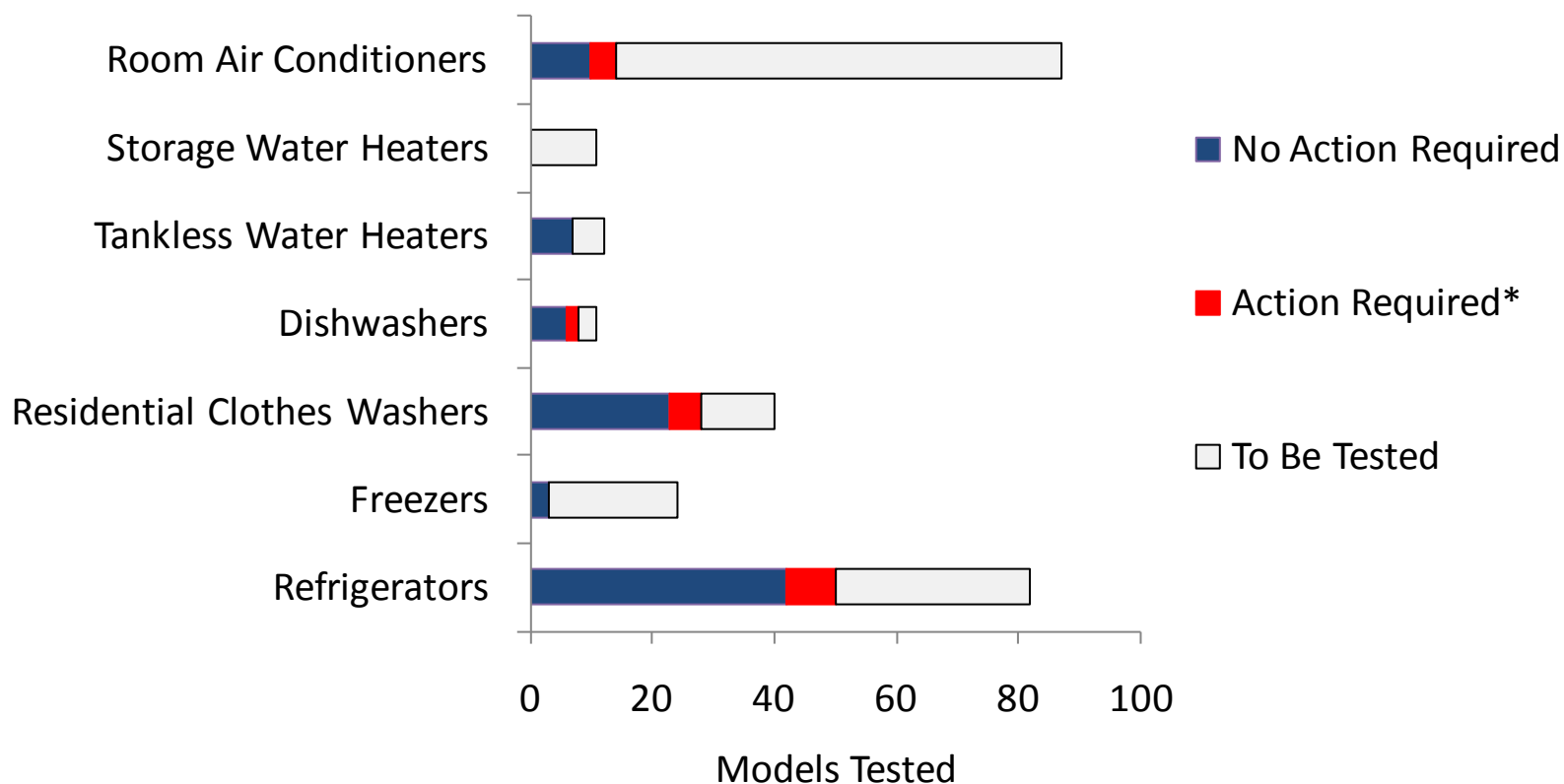
Over 40 percent of Stage I tests are complete.

Appliance	Total	Tested	Remaining
Refrigerators	82	50	32
Freezers	24	3	21
Clothes Washers	40	28	12
Dishwashers	11	8	3
Tankless WH	12	7	5
Storage WH	11	0	11
Room Air Conditioner	87	14	73
TOTAL	267	110	157

Interim Results (Stage I)

Nineteen of the 110 units (17%) require further action (tested over 5% worse than ENERGY-STAR specifications).

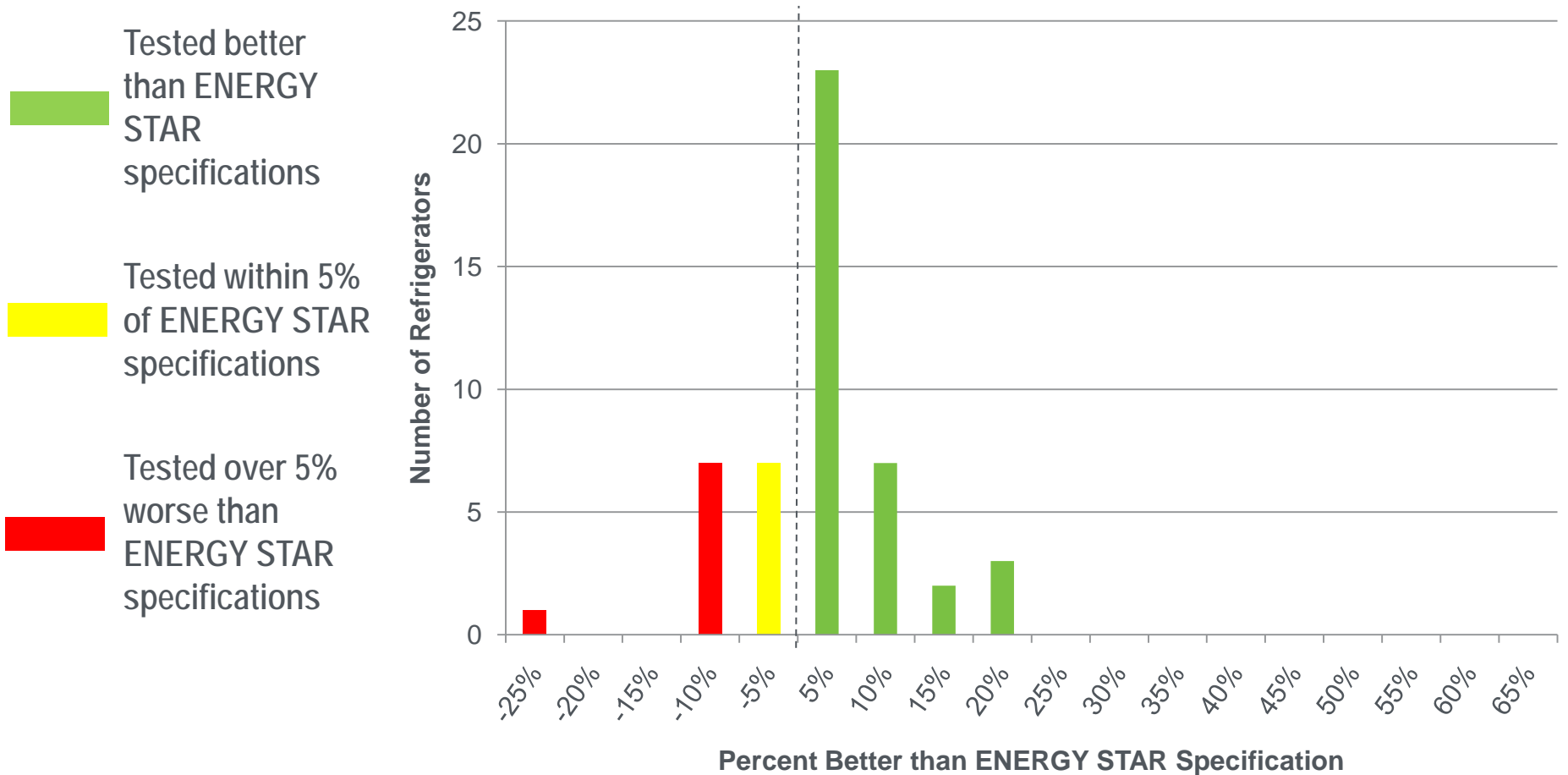
Stage I Results to Date



*Action Required = DOE to contact manufacturer regarding the test results

Sixteen percent of refrigerators tested over 5 percent worse than the ENERGY-STAR AEU specification.

Difference in Tested vs. ENERGY-STAR AEU

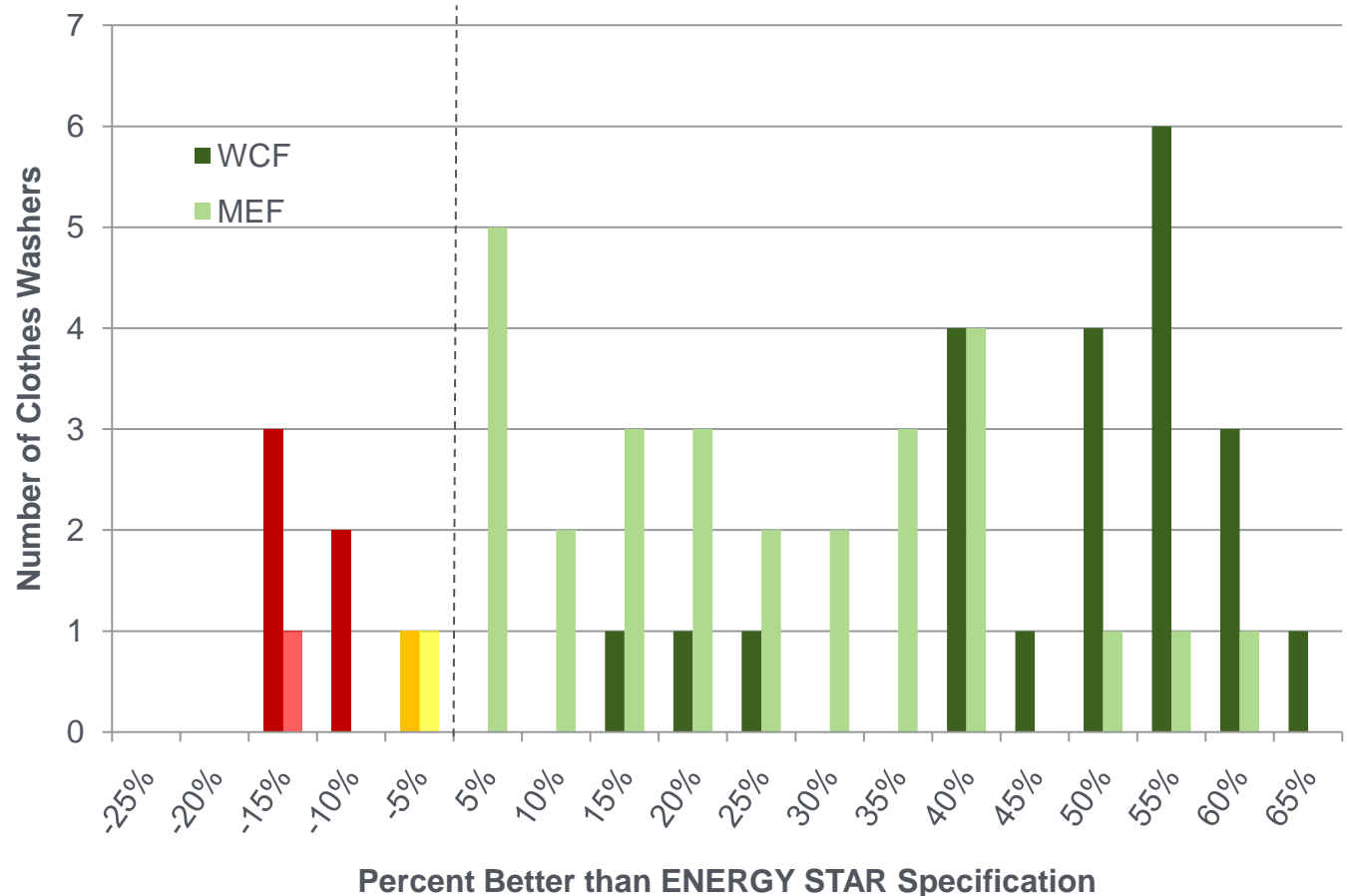


Interim Results (Stage I)

Four percent and 18 percent of RCWs tested over 5% worse than the ENERGY-STAR specifications for MEF and WCF, respectively.

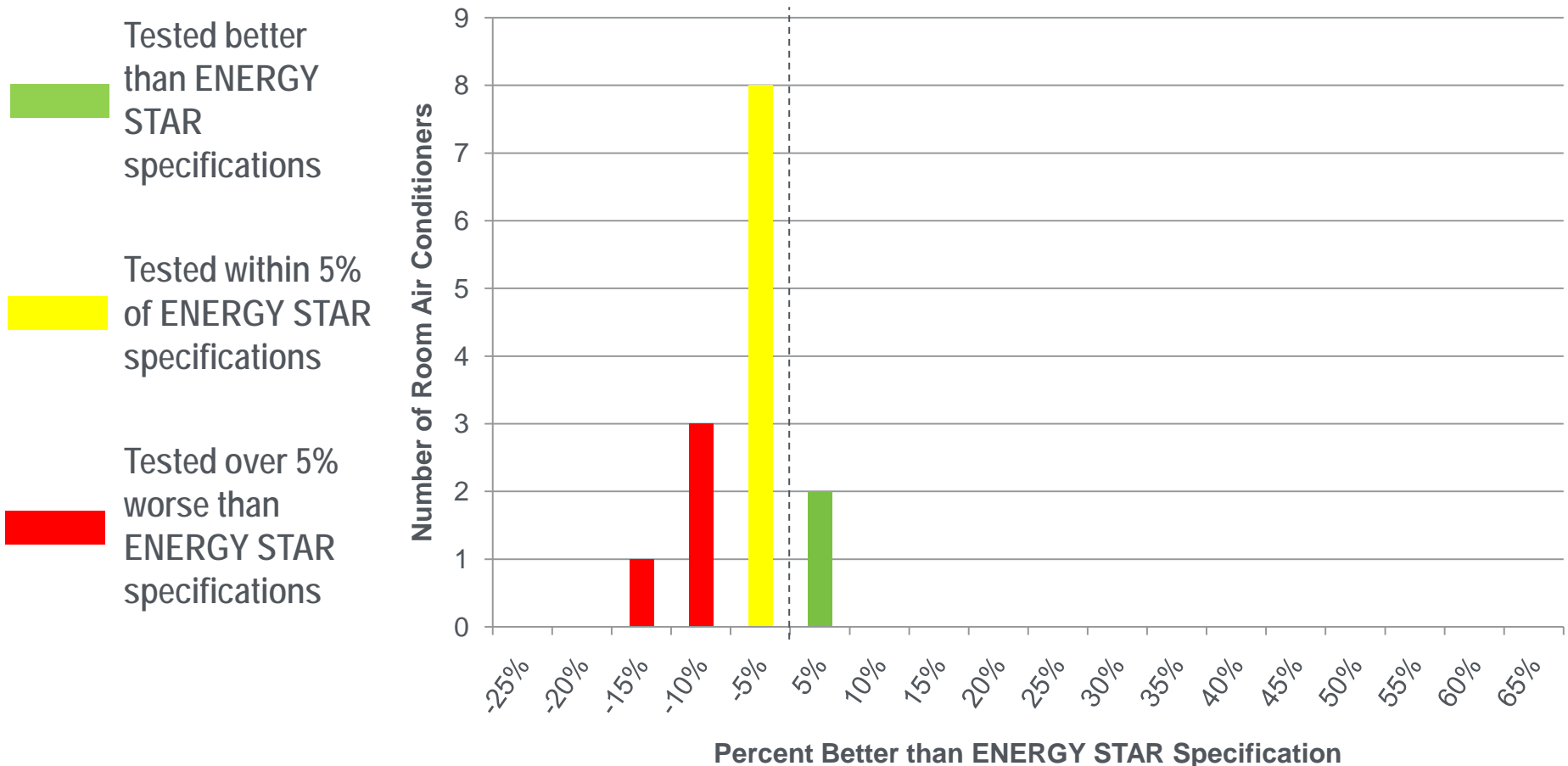
Difference in Tested vs. ENERGY-STAR

- Tested better than ENERGY STAR specifications
- Tested within 5% of ENERGY STAR specifications
- Tested over 5% worse than ENERGY STAR specifications



Twenty-nine percent of RACs tested over 5% worse than the ENERGY-STAR EER specification.

Difference in Tested vs. ENERGY-STAR EER



Interim Results (Stage II)

Based on test results to date, we project that approximately 44 of the 267 appliances will require Stage II testing.

Appliance	Total	Tested	Stage I Units that Require Action	Projected units that will require action
Refrigerators	82	50	8	11
Freezers	24	3	0	1
Clothes Washers	40	28	5	5
Dishwashers	11	8	2	3
Tankless WH	12	7	0	1
Storage WH	11	0	0	1
Room Air Conditioner	87	14	4	22
TOTAL	267	110	19	44

*Projections are approximated from current rates

- 1» Background
- 2» Program Overview
- 3» Testing Process
- 4» Results – Progress to date



5» Lessons Learned

Many lessons have been learned from the pilot program that will help improve future programs.

- Shorten Selection and Testing Cycle
 - Small batch testing may lead to a shorter procurement selection time and testing cycle
- Focus Selection of Products
 - Testing the newest products and high-volume products is more representative of the market
- Enhance Test-Lab Quality Control
 - Future accreditation of labs will facilitate selection of experienced labs having appropriate facilities and test protocols
- Continually Refine Test-Report Templates
 - Provide a consistent process for delivering uniform and complete reports
- Continually Refine Testing Guidelines
 - Ensure that testing is standardized

Questions?