



Commercial Boiler Systems

Mass Market Approaches and Opportunities for Increased Collaboration

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Session Overview

- ▶ Introductions
- ▶ High Level Look at DRAFT Initiative
- ▶ Discuss Challenges and Opportunities for Condensing Boilers and Hybrid Systems in Retrofit Applications
- ▶ Identify Other Program Opportunities and Potential Partnerships with Industry
- ▶ Wrap-Up and Next Steps

Meeting Ground Rules

- ▶ 100% Participation
- ▶ Parking lot for off topic issues
- ▶ All ideas are valid and valued
- ▶ For the Phone Line
 - *6 to Mute/UnMute
 - **DO NOT PUT CALL ON HOLD**

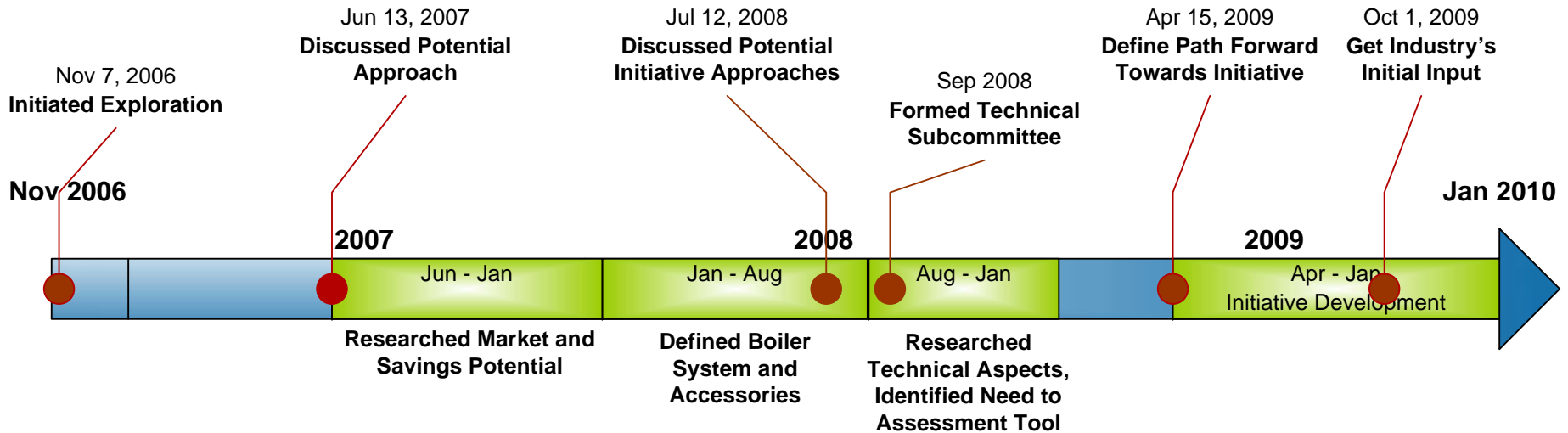
This meeting will follow **CEE Guidelines for Program Meetings**

Introductions

1. Name
2. Organization
3. Specific Objectives for Today's Discussion



CEE's Work to Date



Framework from 2009 IP Meeting

1. Is the boiler a low-pressure steam or hot water system?

STEAM

HOT WATER

2. Is the system design such that you can achieve less than 130°F return water temperatures?

NO

YES

How to move to a hot water system:

How to move to a condensing system:

3. Is the boiler used for space heating or service water heating?

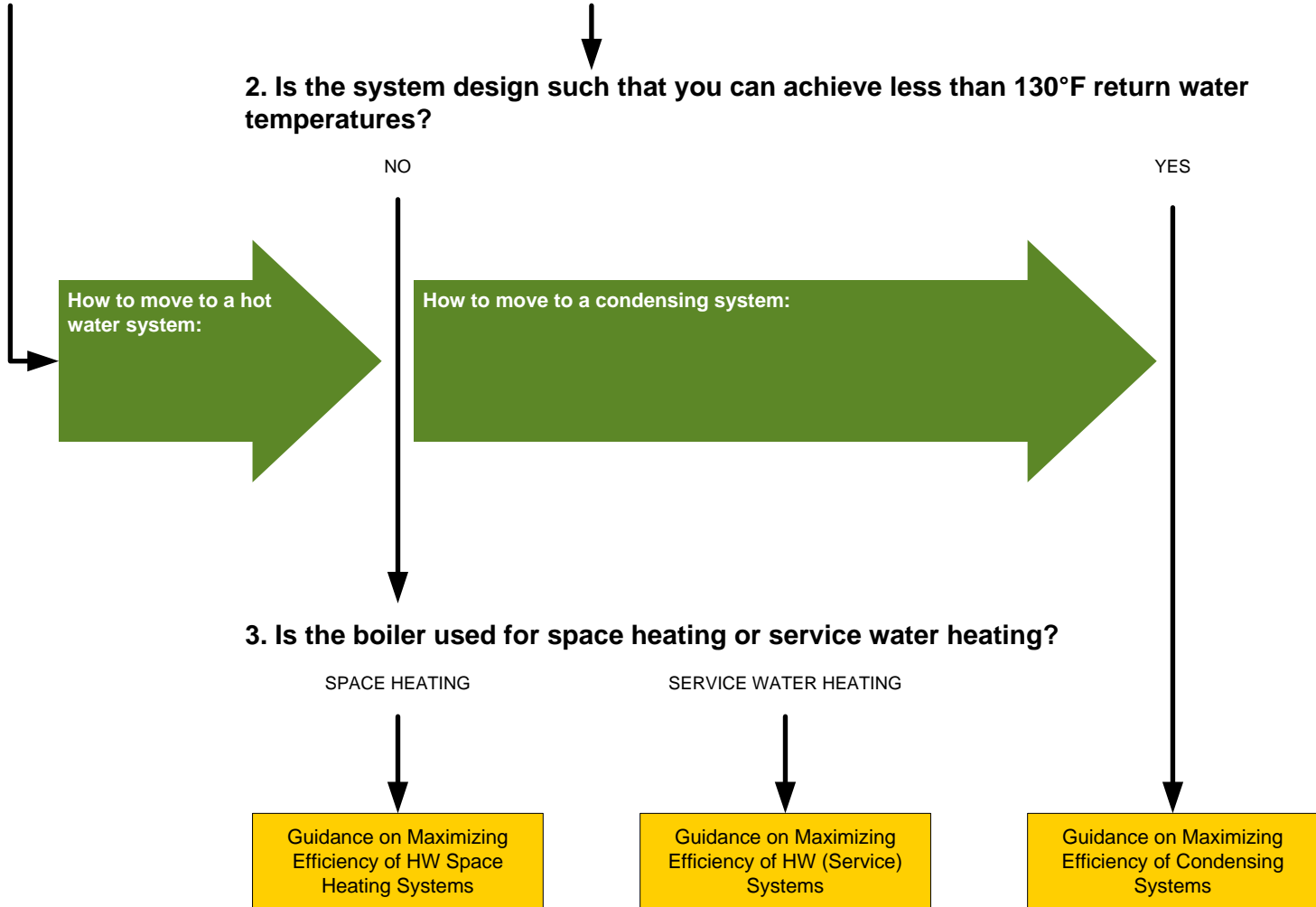
SPACE HEATING

SERVICE WATER HEATING

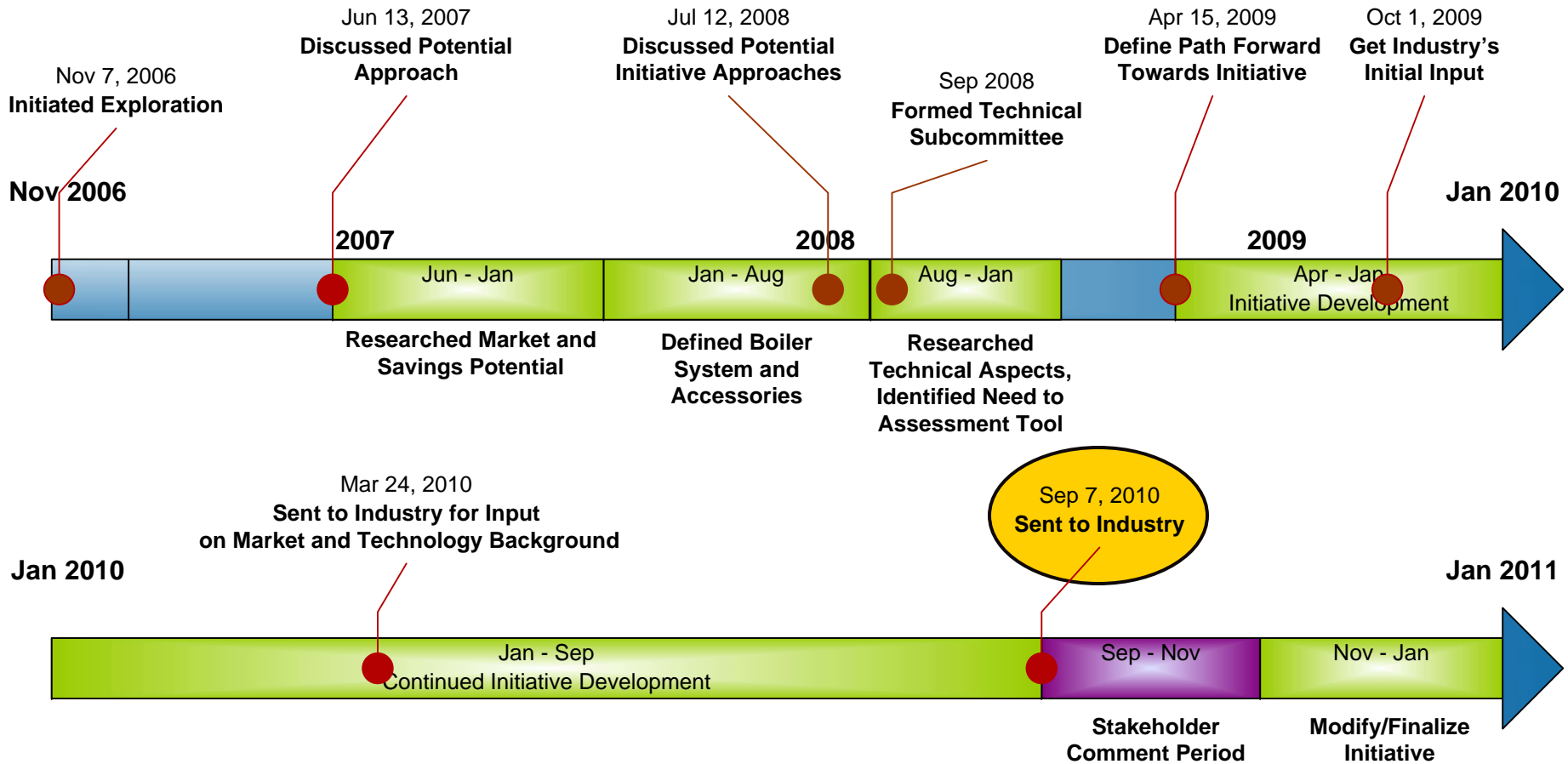
Guidance on Maximizing Efficiency of HW Space Heating Systems

Guidance on Maximizing Efficiency of HW (Service) Systems

Guidance on Maximizing Efficiency of Condensing Systems



CEE's Work to Date



Desired Objectives of an Initiative

- ▶ Increase number of optimized boiler systems
- ▶ Increase number of quality installed and maintained systems
- ▶ Educate stakeholders on what constitutes high efficiency boiler systems, quality installation and quality maintenance
- ▶ Encourage creation of metric to better address annual operating efficiency

The Background of the Approach

▼ Scope:

- “Mass Market” Boilers: 300,000 to 4 million Btu/h
- Focus on hot water space heating systems

▼ Challenges:

- Efficiency is dependent upon system design
- Not a sufficient metric for understanding system or seasonal efficiency

How do efficiency programs address boiler systems (especially in retrofit applications) without needing to analyze each system?

Proposed Approach

▼ Guidance Specification

- Provides guidance about key functionality to help optimize for high efficiency regardless of system designs
- Includes optional emissions specification

▼ Guidance on Additional Measures for Programs/CEE

- Upgrading to Higher Efficiency Systems
- Boiler Sizing and Selection
- Boiler Sequencing
- Quality Installation and Maintenance
- Piping and Jacket Installation
- Early Replacement Programs
- Outreach to Market Actors

Today's Discussion

Focusing on the Big Questions

- ▶ How do programs provide a mass market (prescriptive program) approach for condensing boilers in retrofit applications and feel confident about the savings?
- ▶ How do hybrid systems fit into efficiency programs?
- ▶ What are other opportunities for efficiency programs?

For all: What opportunities are there for efficiency program and industry collaboration? How might we prioritize these opportunities?

Comment Period for the Details: Ends November 1

Condensing Boilers in Retrofit Applications



A Challenge for Programs

Common Program Approach

- ▼ Targets mass-market
- ▼ Provides straightforward equipment rebate
- ▼ Requires less resources than individual system analysis

Challenge with this Approach for Boilers

- ▼ Boiler nameplate does not tell the whole story
- ▼ A variety of configurations and metrics; sample of existing programs:
 - Thermal Efficiency: 16
 - Combustion Efficiency: 6
 - AFUE (Residential Boilers for Commercial Applications): 24
 - Other Metric: 1

Condensing in Retrofit Applications

- ▶ With only steady-state metrics, how do you estimate and feel confident about the savings without analyzing the entire system?
- ▶ Are there key applications where this is a “no brainer”?

Condensing in Retrofit Applications

- ▶ Are there key features/functions that programs should co-promote or confirm (without needing to analyze the system) to help ensure that the boiler condenses for at least part of the year?
- ▶ Are there opportunities for industry/efficiency program partnership to help address this challenge?

Role of Hybrid Boiler Systems



Discussion Questions

- ▶ Again, are there key applications where hybrid systems are a “no brainer”?
- ▶ What are the pros and cons of choosing a hybrid system over a system with only condensing boilers? Do these depend on application?
- ▶ Are there opportunities for industry/efficiency program partnership to help programs in promoting these systems and avoiding confusion in market?

Other Savings Opportunities for Efficiency Programs to Consider



Overview of 2010 Program Summary

In addition to the boiler rebates:

Measure	#	Measure	#
Tune Ups	9	Vent Damper	4
Boiler Reset Controls	8	Combustion Mgmt	3
Pipe Insulation	5	Programmable T-Stats	2
Modulating Burners	4	Heat Recovery Ventilator	1
Tank Insulation	2	Cutout Controls	1
Proper Sizing	1	Turbulator	1

Discussion Questions

- ▶ Are there additional measure that efficiency programs are missing?
- ▶ Based on the list, in your opinion which of these should be more widely promoted?

Prioritizing Opportunities



Guidance on Additional Measures

- ▶ Upgrading to Higher Efficiency Systems
- ▶ Boiler Sizing and Selection
- ▶ Boiler Sequencing
- ▶ Quality Installation and Maintenance
- ▶ Piping and Jacket Installation
- ▶ Early Replacement Programs
- ▶ Outreach to Market Actors

Partnerships Across Industries

- ▶ In addition to any opportunities previously identified through our discussion, are there other potential projects where efficiency program and boiler industry partnerships might prove beneficial?
- ▶ How might we prioritize these?

Contact

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