2020 NON-RESIDENTIAL MEMD CALIBRATION RESEARCH

June 16, 2020

Presented by Jeremy Kraft

Consumers Energy
Count on Us

DTE

EMI CONSULTING

AGENDA

Project Introduction

HVAC Controls

- Research Background
- Research Objectives
- Methodology
- Research Tasks
- Timeline

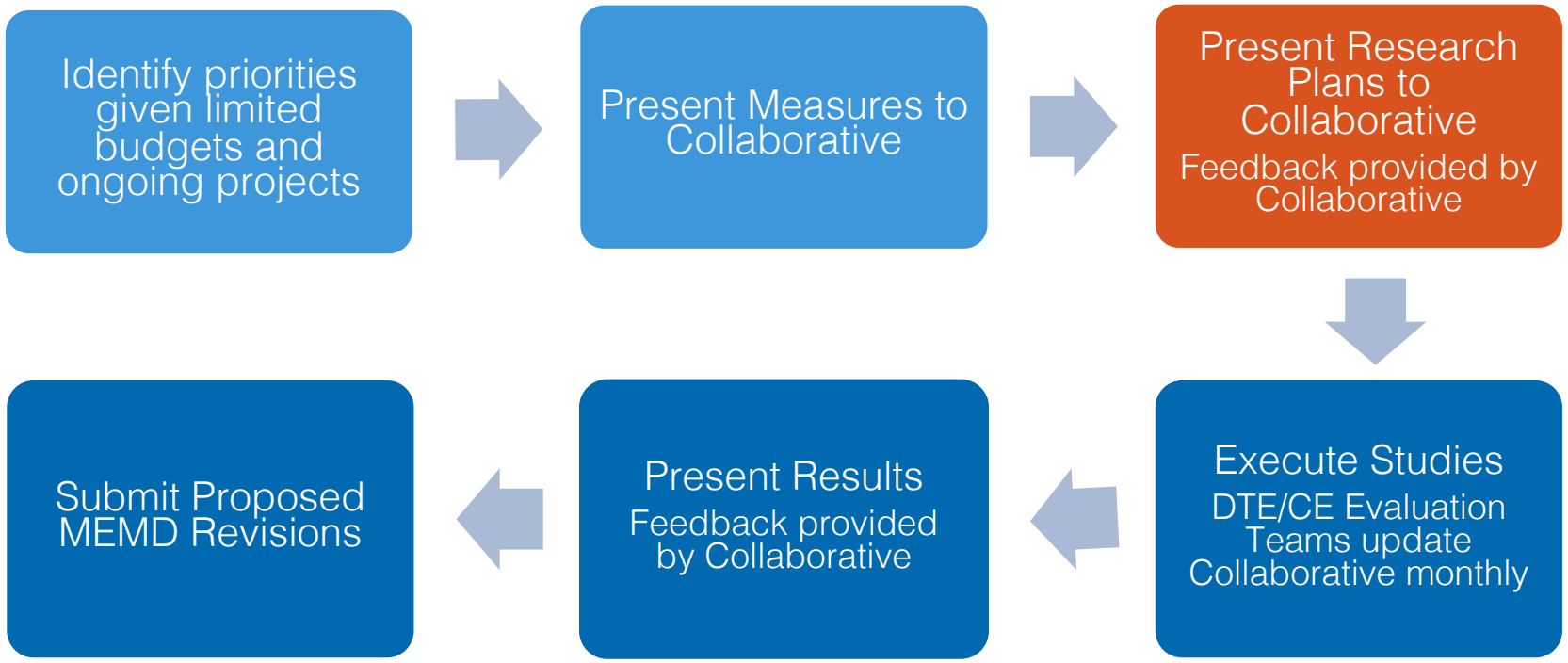
Boiler Tune-ups

- Research Background
- Research Objectives
- Methodology
- Research Tasks
- Timeline

PROJECT INTRODUCTION

MEASURE CALIBRATION

Measure calibration refers to the process where third-party evaluators conduct Michigan specific research which analyzes the per-unit savings impacts for current MEMD measures.



CALIBRATION RESEARCH TEAM

EMI CONSULTING

Director

Jeremy Kraft

HVAC Controls

Project Manager

Brett Close

Boiler Tune-ups

Project Manager

Andrea Salazar

Technical Lead

Eric O'Neil

HVAC CONTROLS CALIBRATION

RESEARCH BACKGROUND

HVAC controls contribute substantial savings to Consumers Energy and DTE's portfolios and current estimates in the MEMD lack Michigan-specific information. HVAC measure controls contribute:

- Consumers Energy: 25% of 2020 gas plan
- DTE: 20% of 2018 gas savings

Without calibration efforts, uncertainty in these estimated HVAC controls savings is high.

RESEARCH OBJECTIVES

HVAC controls were chosen for needed calibration due to the potential from increased focus on Energy Management Systems. The objectives of this research are to:

- Estimate energy savings (kWh and MCF/therm) and peak demand (kW) reductions for key HVAC controls measures in Consumers Energy and DTE's EWR portfolios.
- Specific research questions for this project include:
  - What are appropriate deemed kWh, therm, and kW savings values for key HVAC control measures?
  - If there is sufficient variation and sample size across weather zones: How do the savings vary across Michigan weather zones?
  - If there is sufficient variation and sample size across building types: How do savings vary across building types?

METHODOLOGY

The research team will estimate the savings values and peak demand reductions using:

- Energy consumption data from Consumers Energy and DTE customers who have installed HVAC controls
- Weather zone and operating condition data if large enough sample sizes available

The precise methodology will be determined as part of the continued research planning process.

RESEARCH TASKS

Task 1: Research Planning

- Identify key measures for analysis based on participation and EWR plans.
- Select an analysis methodology based on program participation and availability of AMI and GCM meter data.

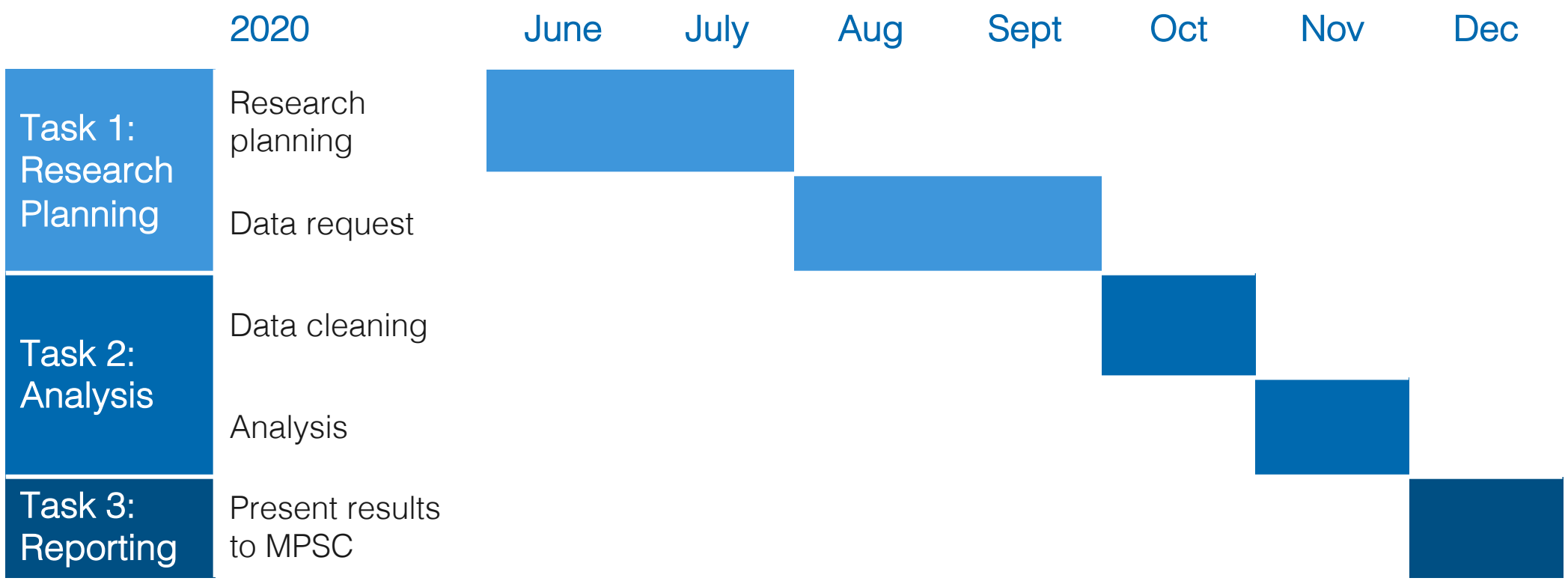
Task 2: Billing Analysis

- Identify participants and the timing of participation, and clean the meter data
- Estimate normalized reduced energy consumption due to HVAC controls
- Estimate uncertainty in results

Task 3: Reporting

- Present results to the MPSC

TIMELINE


2020
June
July
Aug
Sept
Oct
Nov
Dec
Task 1: Research Planning
Research planning
Data request
Task 2: Analysis
Data cleaning
Analysis
Task 3: Reporting
Present results to MPSC

BOILER TUNE-UP CALIBRATION

RESEARCH BACKGROUND

Currently, boiler tune-ups savings are measured based on a baseline of a non-serviced boiler. Some facilities regularly perform boiler tune-ups, leading to uncertain or inaccurate savings estimates. Boiler-tune up measures account for:

- Consumers Energy: 108,152 MCF/yr,15.8% of gas savings claimed in the Business Solutions Prescriptive Program
- DTE: 57,357 MCF/yr, 9% of gas savings claimed as a part of the C&I Prescriptive Program.

RESEARCH OBJECTIVES

The objectives of this research would include:

- Estimate the savings that are accruing due to commercial boiler tune-ups and compare the estimate to claimed savings - per boiler capacity (therms/kBtu/hr/yr)
- Provide accurate and up-to-date data to use to determine more accurate energy savings for these measures

METHODOLOGY

The research team will calculate savings values, baseline and post tune-up efficiency, and reasonable hours of use using:

Program Material Review:

- Relevant program documentation from Consumers Energy and DTE
- Work papers from the MPSC
- Program project files provided by Consumers Energy and DTE

Field Data Collection:

- Boiler efficiency data from contractor ride alongs and site visits
- Hours of use data from contractor ride alongs and site visits

The precise methodology will be determined as part of the continued research planning process.

RESEARCH TASKS

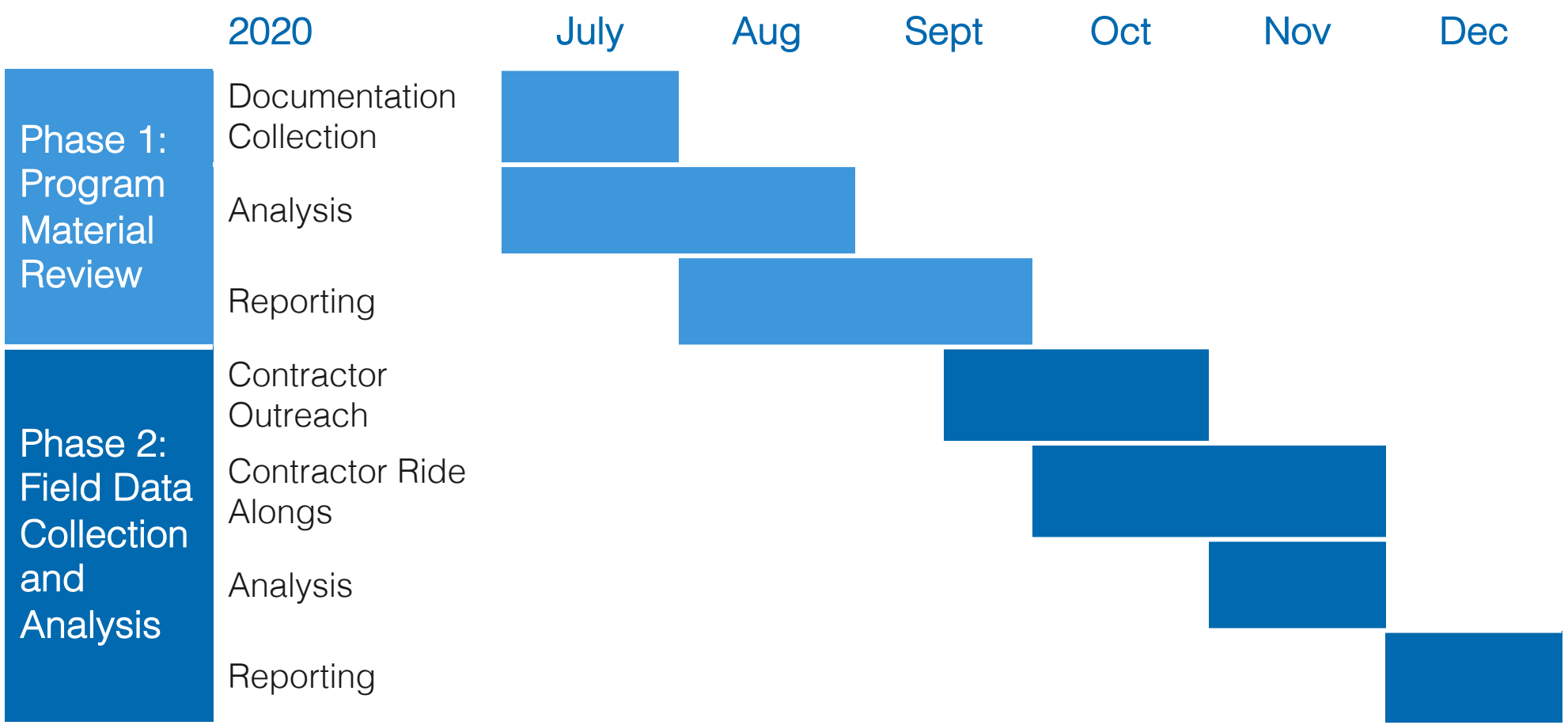
Phase 1: Program Material Review

- Documentation collection of hours of use, capacity, and pre and post-tune-up boiler efficiency
- Analysis of relevant data
- Reporting of results to MPSC

Phase 2: Field Data Collection and Analysis – optional based on results of Phase 1

- Contractor outreach and data collection of boiler efficiency and hours of use
- Contractor ride-alongs to verify data collected in Phase 1 and Phase 2
- Analysis of relevant data
- Reporting of results to MPSC

TIMELINE


2020
July
Aug
Sept
Oct
Nov
Dec
Phase 1: Program Material Review
Documentation Collection
Analysis
Reporting
Phase 2: Field Data Collection and Analysis
Contractor Outreach
Contractor Ride Alongs
Analysis
Reporting

EMI CONSULTING

thank you

Jeremy Kraft, jkraft@emiconsulting.com