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# New Tools and Methods for the Clean Cooking Sector

# Unified Wireless Launcher

- **Modularity:** Up to 20 sensors per household
- **Wireless**
- **Ease of Use:** Simultaneous launch/download
- **Future proof:** Over the air update

# EXACT Temperature Sensor

- Contactless **InfraRed** measurement
- Waterproof Enclosure
- 24,000 logs (5+ months at 10 min log rate)
- 3 years of battery life
- Wireless

# HAPEx PM Sensor

- PM2.5: 10 µg/$m^3$ to 50,000 µg/$m^3$.
- Accelerometer for compliance measurement
- 10,400 logs (2 months @ 10min log rate)
- 5 years of battery life.
- Wireless connectivity
- Small size

# FUEL Sensor

Oregon State University
Advantage Impact

- Rated for 50kg or 100kg
- 1 gram resolution
- 10 grams relative accuracy
- 5 years battery life
- Compressive version for LPG

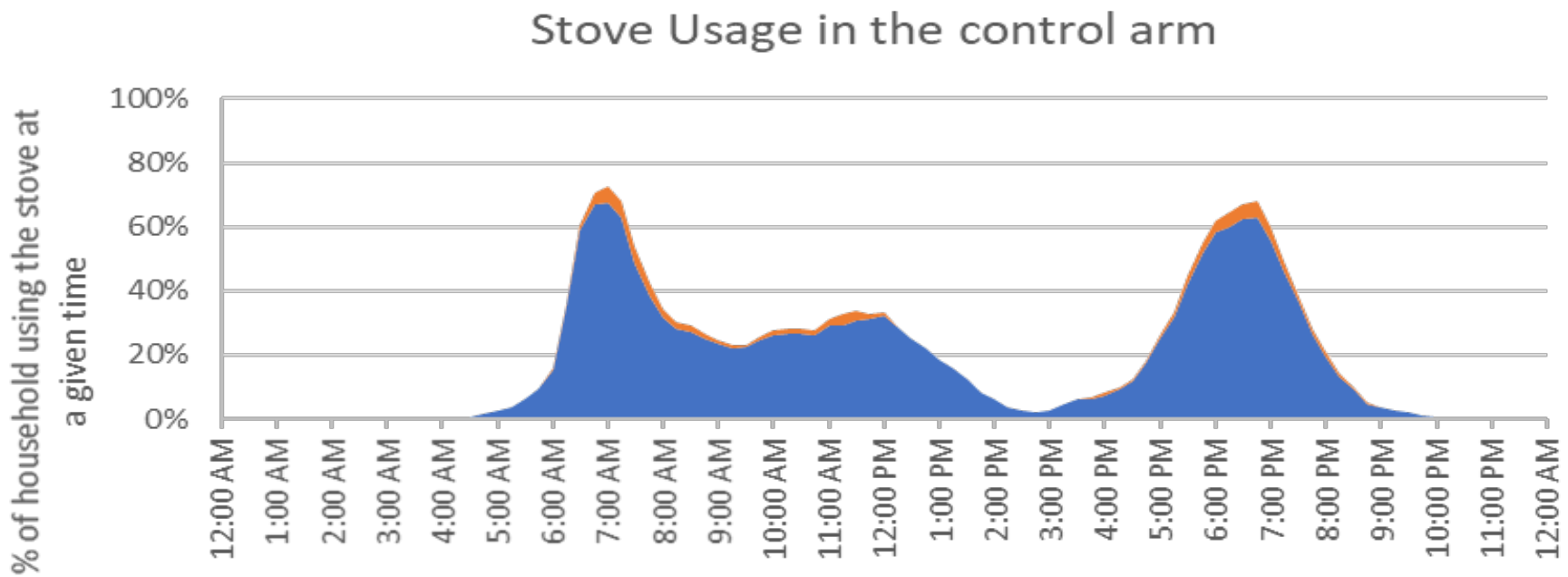
# Constant Flow uPump

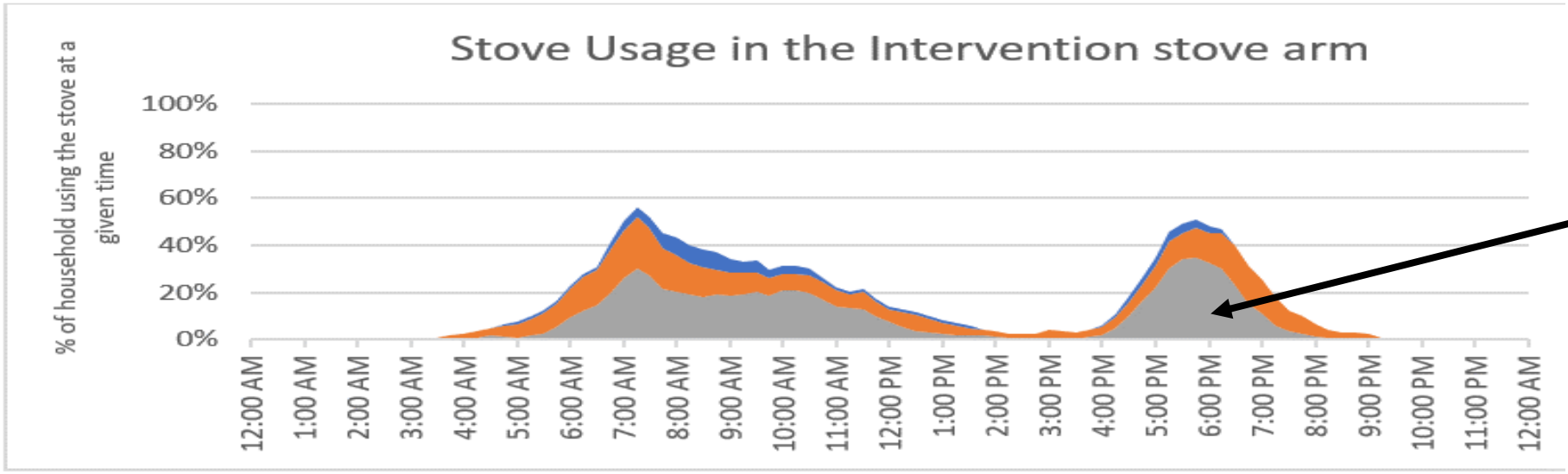
- Flow: 0 - 2 LPM
- Battery life: 24h at 1.5LPM
- Silent
- Field swappable standard batteries
- Maintain flow within 5%

# Power Logger

- Measure and Log:
  - Voltage (0-230V)
  - Ampere (0-16A)
  - Total consumption (kWh)
  - Power Factor (0-100%)
- Wireless
- 5 years battery life

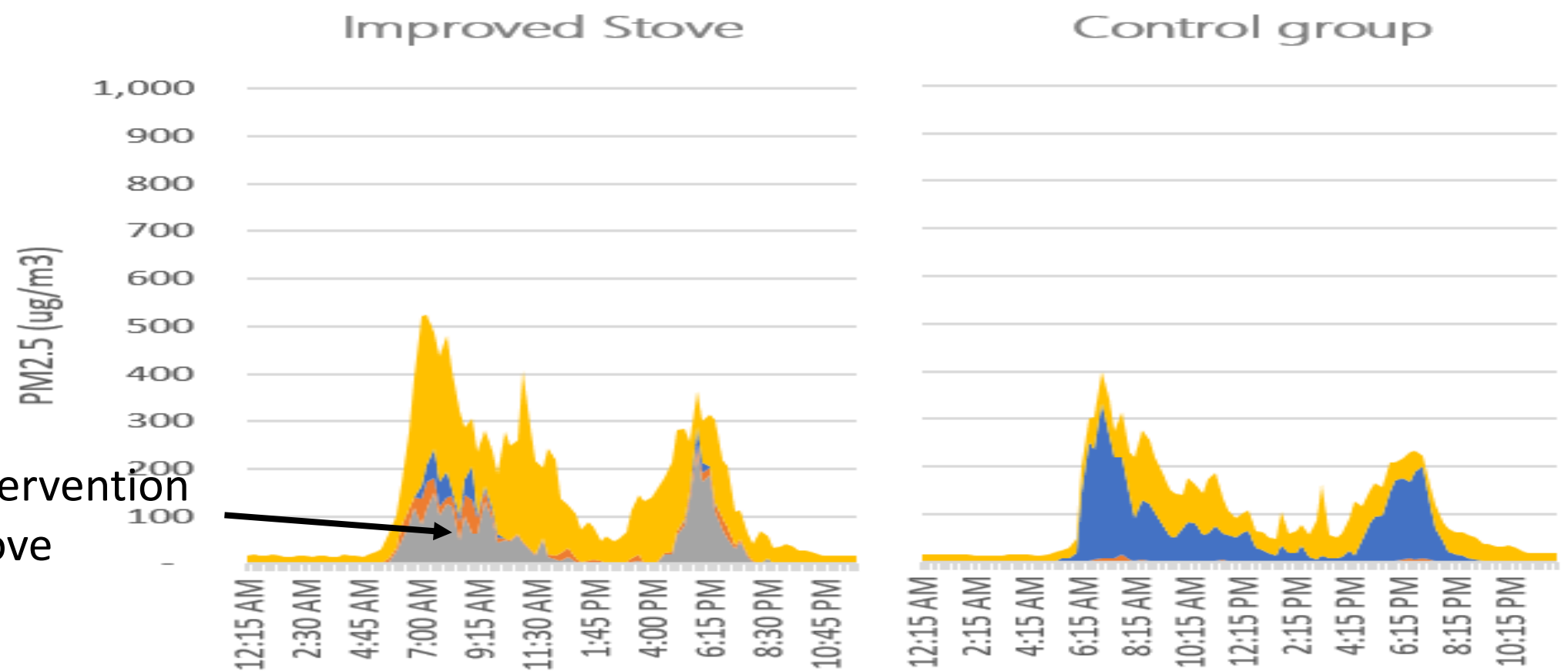
# Leveraging Sensor Integration and Fusion



# Leveraging Sensor Integration and Fusion

Fraction of personal exposure by source




Intervention Stove

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# Meal Counter

## Less is more

# Why do people use cookstove trackers?

Adoption
Sustained Use
Displacement rate

Most of the time, it is not to know precisely the cookstove temperature at 10:24 AM!

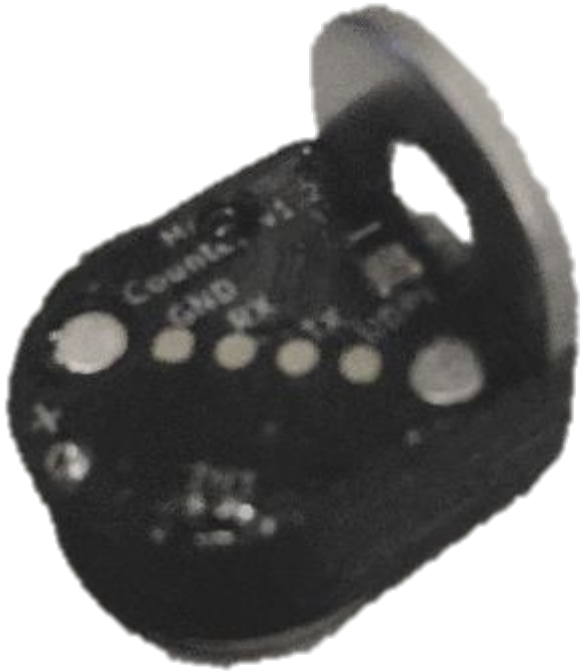
# Too much data is a burden

# Meal Counter simply output Cooking Events and Cooking time

- Better Measurement
- Algorithm on device (Edge Processing)

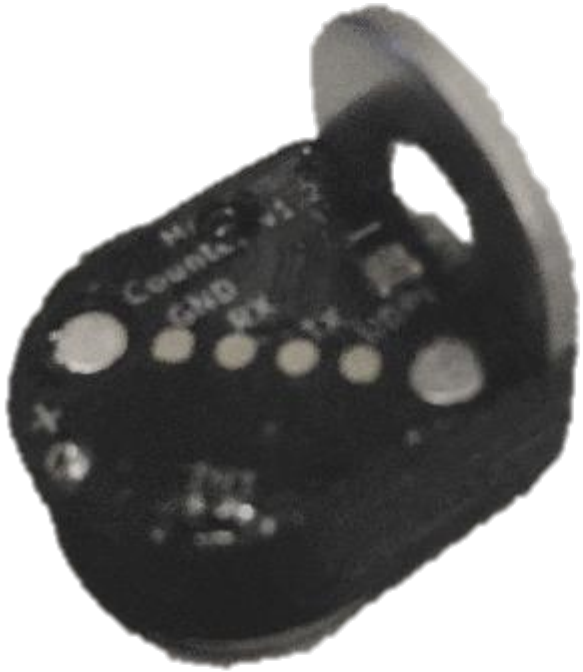
# Different Measurement for different stoves

- **Flame sensor**: open fire, LPG, Ethanol, biogas
- **Temperature gradient sensor**: low temp stove
- **Absolute Temperature sensor:** high temp stove



# Other Specifications

- Rated for 125 degree C (250F)
- 3 years battery life
- Measurement every 10s
- One button GUI
- **US$ 15**
- No data analysis or training cost
- Fully **OPEN SOURCE**, let’s make it great together!



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# Thank You!

olivier@climate-solutions.net