

PLANCHA STOVE DEVELOPMENT ETHOS 2018



Hands for Peacemaking Foundation Impact

- 500 Subsidized Humanitarian Stoves distributed to villages in Guatemala annually
- Stoves available for retail sale in Barillas, Guatemala (Aler Skill Center) and in stove stores in three towns around the country
- Along with stoves, HFPF installs clean water solutions, schools and school equipment

Distribuidor autorizado

Verano %

Toda Compra
Se deposita
en Bursaria
Cl. #
32 9102 3148



**Cocina Moderna,
Sabor Tradicional**
Calienta toda la plancha a poder
hacer tus recetas favoritas para
la familia numerosa

Cocina Mejor
Calienta rápido
El fuego arde sin soplar
No llores por el humo
No te quemes

Convive en Familia
No hay humo y la familia
se junta alrededor de la
plancha a comer, agarrando
la tortilla caliente

Invierte en tus Sueños
Tu leña rinde el doble dejando
presupuesto para lo más
importante. *¡Quédate!*
con Q125 mensuales.





Centro de Capacitacion

Aller



Partnership Objective

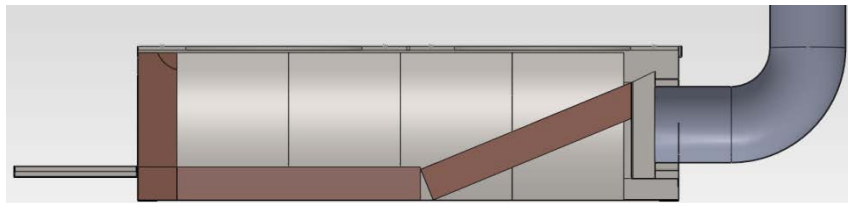
With the support of Hands for Peacemaking Foundation
Burn Design Lab is committed to improving...

- ❑ **The Durability**
- ❑ **The Manufacturability**
- ❑ **The Safety**
- ❑ **The Performance**

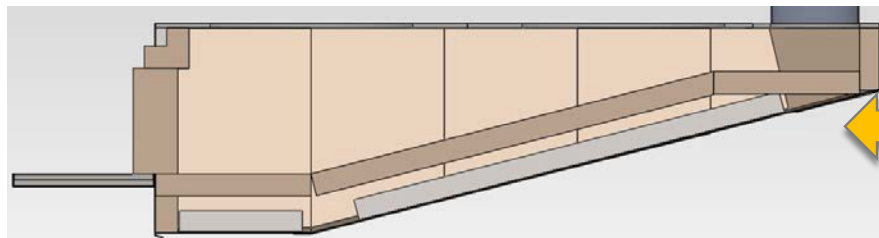
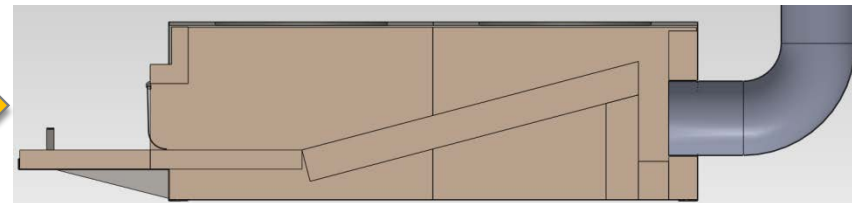
...of the Aler Plancha Stoves

Iterative Prototyping

Baseline Model

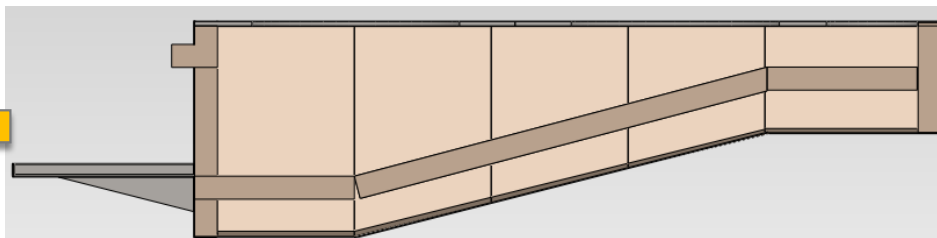


Prototype 1

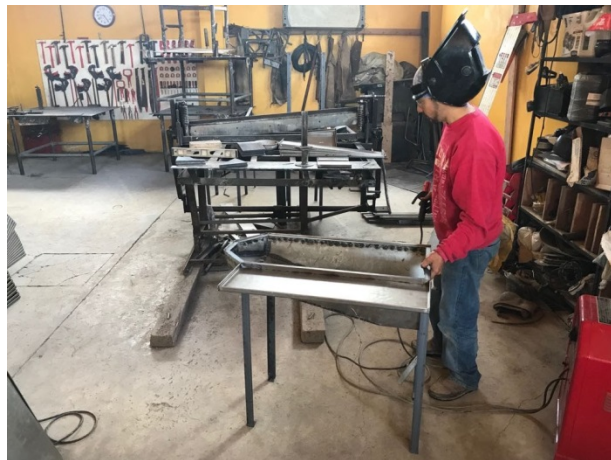


Prototype 3

Prototype 2



Simultaneous Prototyping



Focus Groups and Field Testing



Aler Pequeña

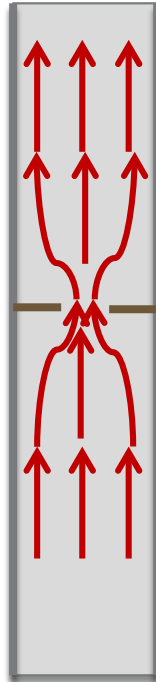


BDL Prototype 3



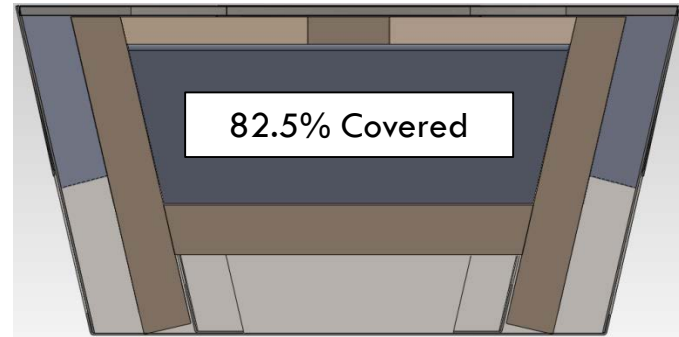
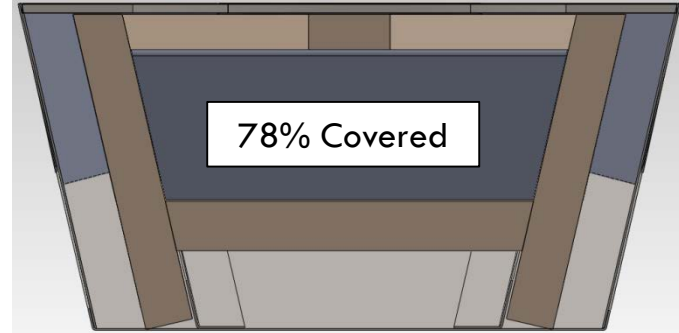
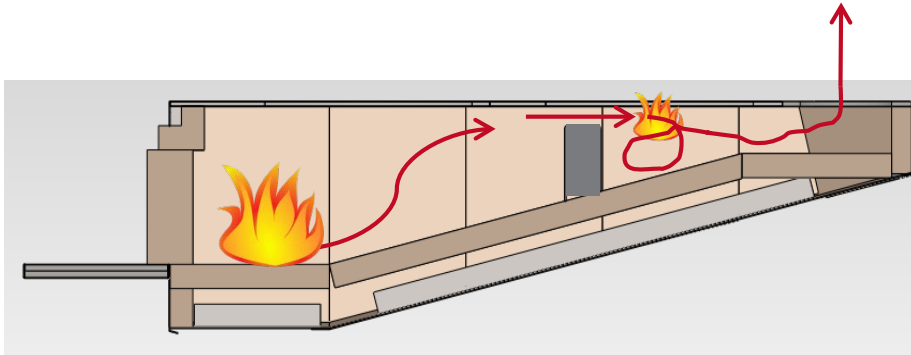
75% Stack Area Reduction

Interchangeable orifices were used to modify the open area of the exhaust pipe. After several tests with 25%, 50% and 75% area reductions, we chose the 75% area reduction (shown at right) as the most promising to test for performance.



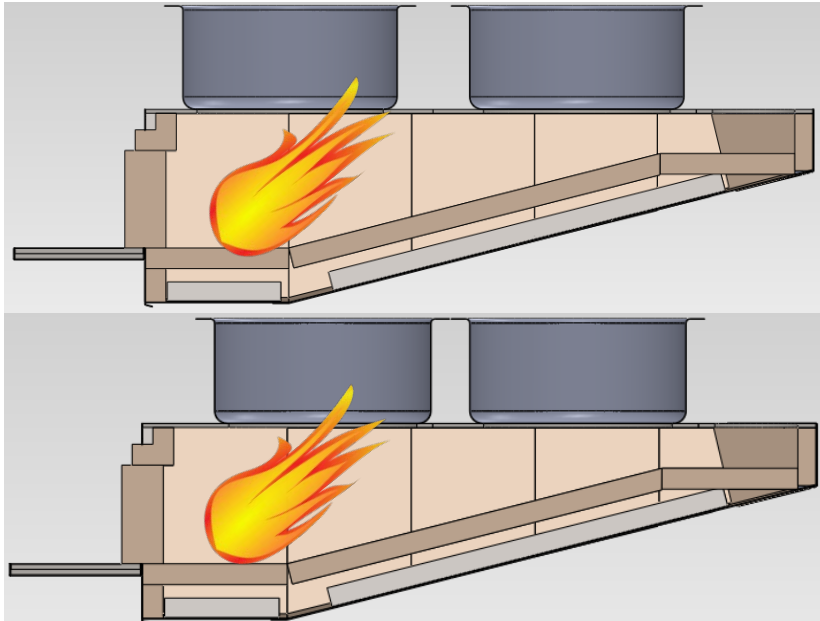
Baffles to Manage Air Flow

After testing the 75% stack reduction, we saw the impact of reducing the flow through the stove. The UW recommended to keep with the area reduction but move the pinch point closer to the fire (out of the stack and into the stove). A baffle was designed that would constrict the flow equivalent to the 75% (actually about 78%) reduction in the stack. It was placed below the leading edge of the back pot. We then tried an even tighter (taller) baffle with a reduction of 82.5% to try to amplify the effects of the more open baffle.

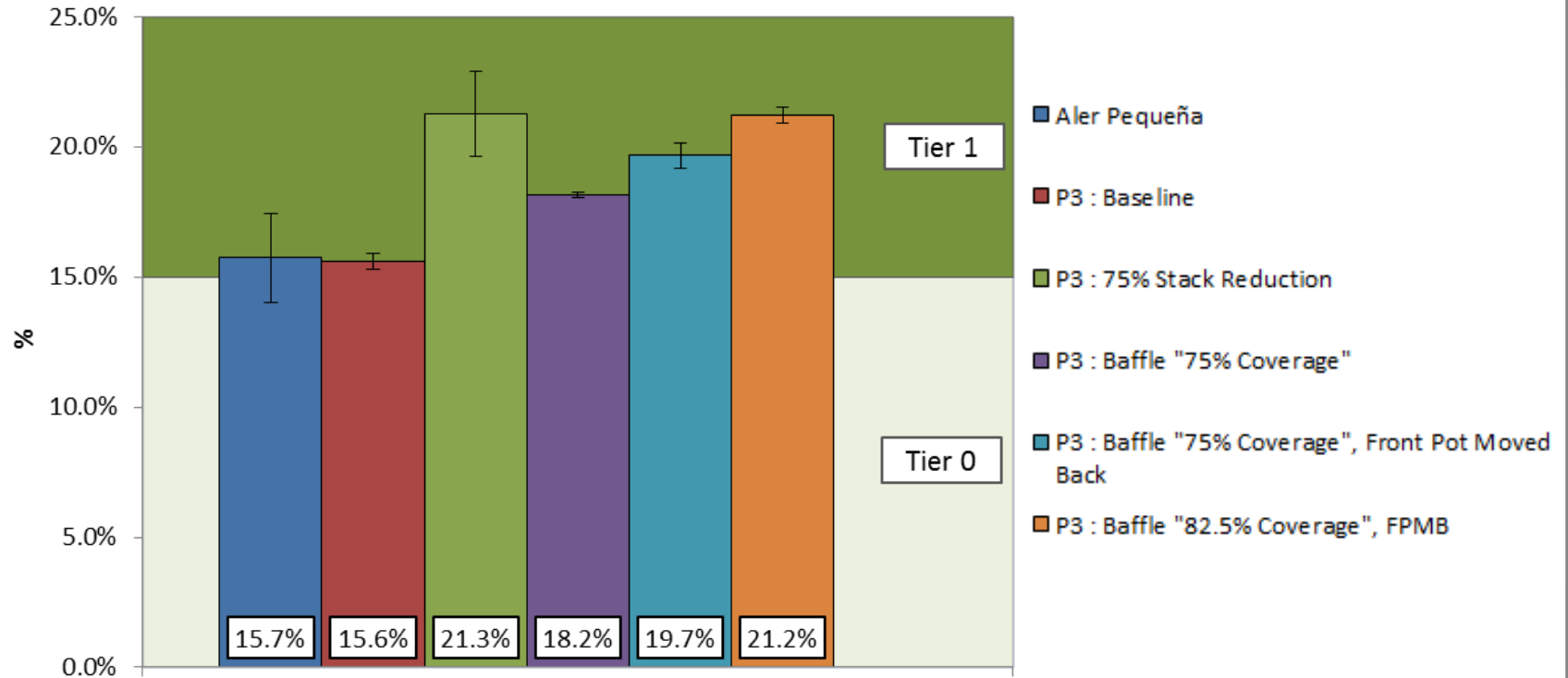


Baffling, Moving the Front Pot

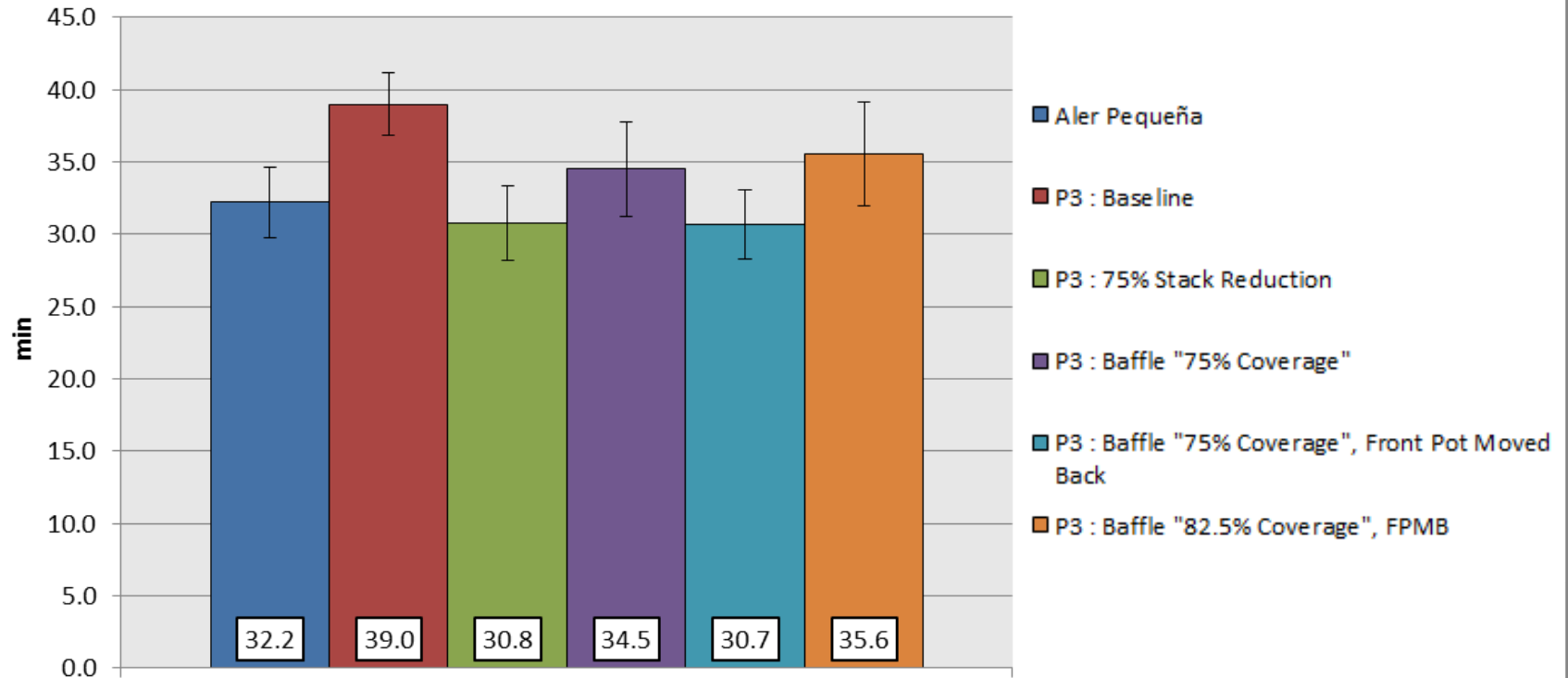
To test the hypotheses that the draft of the stove is pulling the majority of the heat from our fire location past the front pot and out the stove, we moved the front pot back as far as we reasonably could (1.75in).



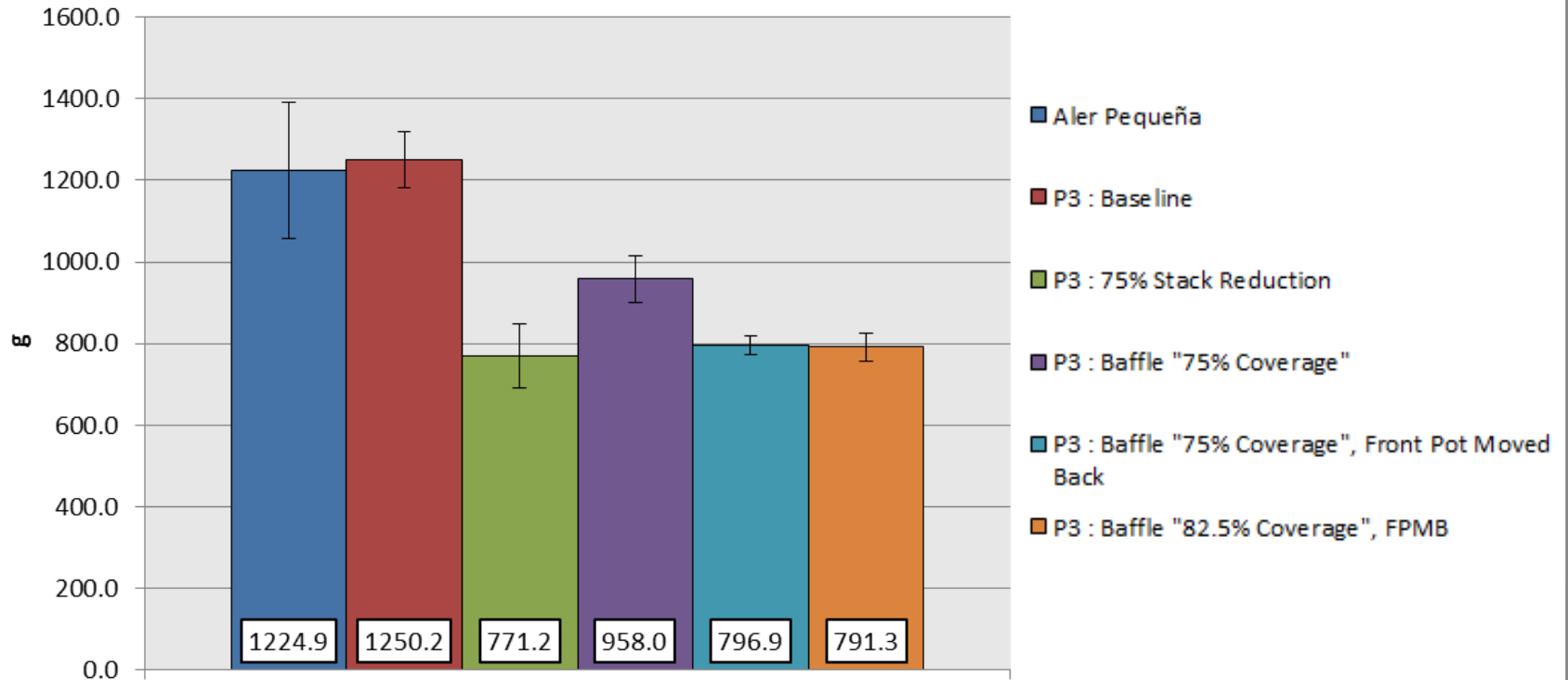
High Power Efficiency (Cold)



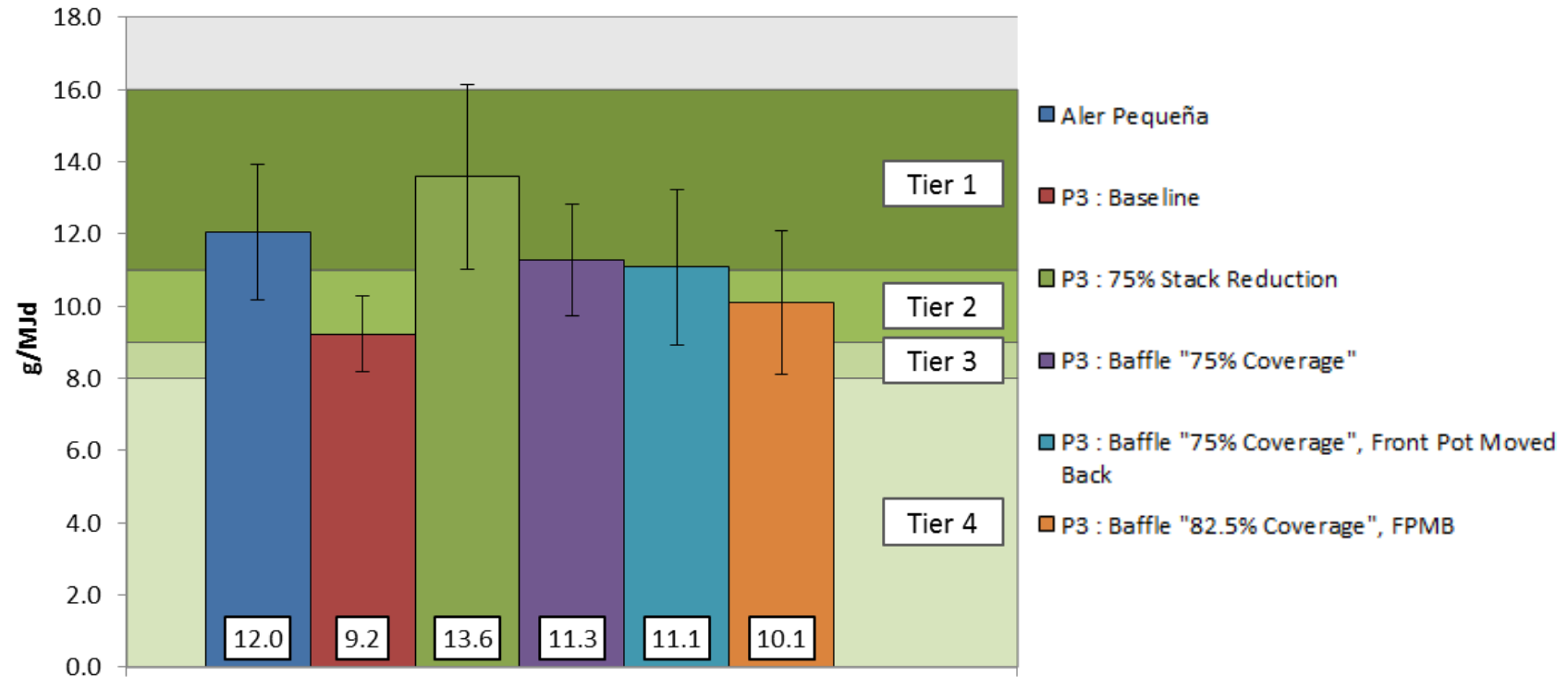
Time to Boil (Cold)



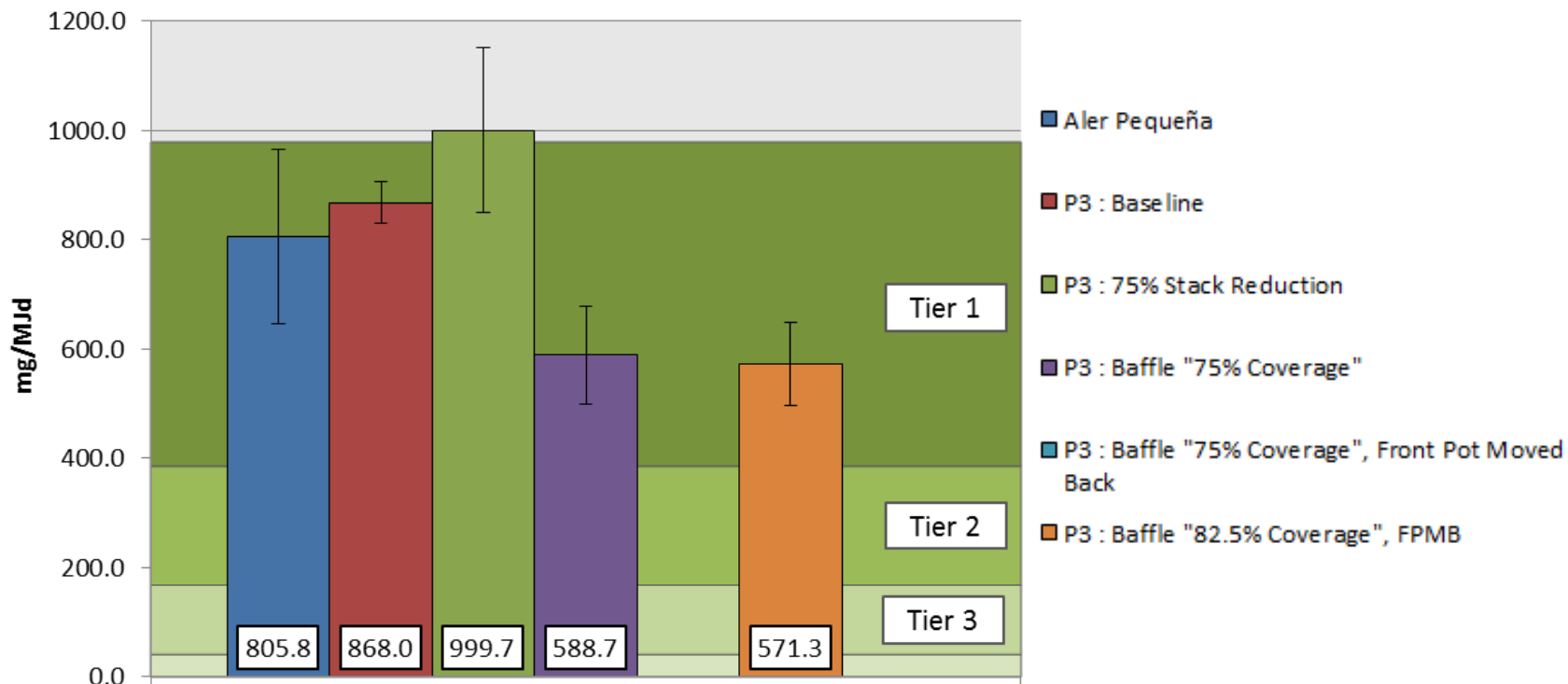
Dry Fuel to Boil (Cold)



HP CO Stack (Cold)



HP PM Stack (Cold)



Next Steps

- Run Full (3 Phase) WBT with “Lab Wood”
 - ▣ 82.5% Baffle, Pot Moved Back
- Run Full WBT with irregular “Found Wood”
- Run “Extended Burn Test” with “Found Wood”
 - ▣ Testing temperature impact of long cooking tasks
- Install baffles in user stoves in Guatemala

Questions?