Executive Project Summary

of

SYSTEMATIC ENERGY EFFICIENCY STUDY FOR DIRECT AND INDIRECT FIRED HEATERS

By

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A research study project related to system modeling and comparison in systematic energy efficiency between indirect and direct fired space heating equipment being prepared for the fulfillment of requirements for the degree of Master of Science in Mechanical Engineering

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Introduction

The energy efficiency of space heaters is rated by Annual Fuel Utilization Efficiency (AFUE) governed by the Department of Energy in the United States which is a simple ratio of useable heat and fuel usage of a single heating device. It doesn't consider the overall performance of the heating system including not only the heating devices but also the heating space characteristics according to different applications. The current AFUE method calculates only the energy efficiency which is thermodynamics first law efficiency. In this research, the systematic energy efficiency of a heating system rather than simple device efficiency has been defined and investigated. The systematic efficiency considers the overall efficiency of the whole heating system and it varies in the different applications even though with the same heating device. So it represents the performance of the system more precisely. Analytical models in Simulink have been built to calculate the systematic energy efficiency, and to evaluate the systematic energy efficiency of heating systems with two different types of heaters, direct fired and indirect fired heaters. Two scenarios are considered for the direct fired heating system, constant supply air flow rate and constant supply air temperature. In both scenarios, the systematic energy efficiencies of direct fired heater are not always constant at its furnace efficiency but related to several parameters such as space air change requirement and ambient temperature.

Objectives

To achieve the goal of this research, following objectives were completed:

1. Indirect and direct fired heaters and heating systems feature study.
2. Methodology to evaluate the systematic energy efficiency of heating system.
3. Heating system modeling in Simulink.
4. Simulate and analyze systematic energy efficiency for indirect and direct fired heating system under different building conditions.
5. Case study and Simulink model validation.
6. Conclusion and direction for choosing proper system in different applications.
7. Reporting.

Methods of Analysis

1. Methodology to evaluate the systematic energy efficiency of heating system.
   1) Systematic energy efficiency definition.
2. Simulink Modeling
   1) Indirect fired heating system model with On-Off control.
   2) Direct fired heating system models
      - Constant air flow rate
      - Constant supply air temperature
3. Simulation and analysis for certain building under different outdoor air temperature and air change requirement.
   1) Systematic energy efficiency analysis for both heating systems (Constant air flow rate for direct fired heater).

2) Systematic energy efficiency for direct fired heating system under different outdoor air temperature and supply air temperature (Constant supply air temperature).
3) Natural gas consumption and demand comparison.

Systematic Energy Efficiency Definition

To study the overall energy efficiency of a certain heating system other than simple Annual Fuel Utilization Efficiency (AFUE), the systematic energy efficiency was defined.

The system schematics of indirect and direct fired heating systems are shown in Figure 1 and 2.

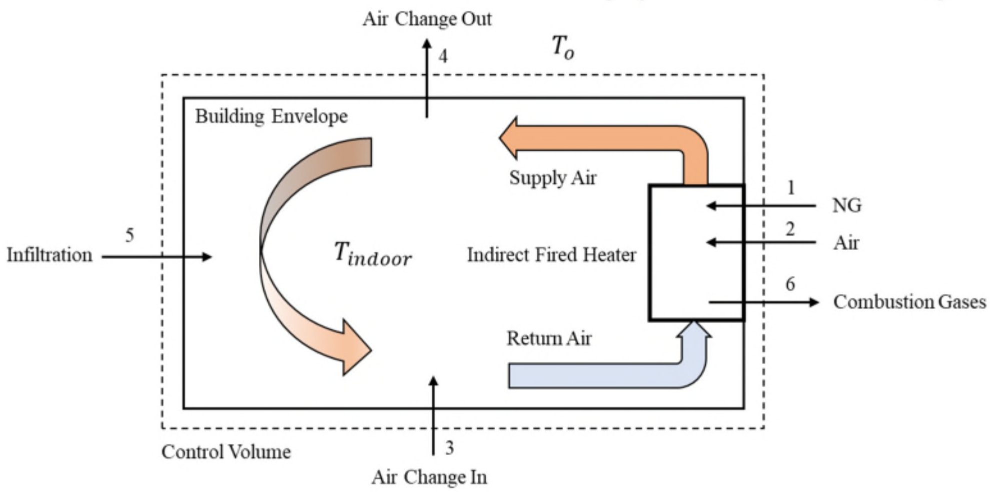

Figure 1: System schematic of indirect fired heating system

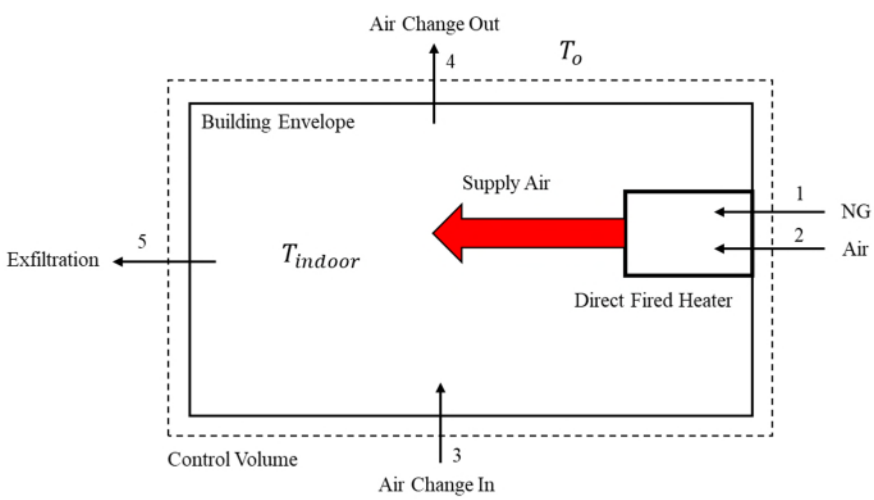

Figure 2: System schematic of direct fired heating system

In a commercial or industrial space which needs to be heated, the inner space is always maintained at a higher temperature than outdoor environment. So the heat is continuously being lost through the boundary. Building codes require that during periods when the building is occupied by people, an essential amount of outside fresh air is required to replace indoor air which results in another kind of heat loss. Assuming there is no other heat source inside the building envelope, the total heat loss of the control volume can be considered as heating requirement or heating load. The systematic energy efficiency is defined as follows:

$$\eta_{SYS} = \frac{Heating\ Load}{NG\ Consumption\ in\ terms\ of\ Btu} \quad (1)$$

$$Heating\ Load = Heat\ Loss\ Thru\ Boundary + Heat\ Loss\ via\ Essential\ Air\ Change \quad (2)$$

Sometimes the direct fired heater will bring in more fresh air than that is needed to satisfy the code requirement for fresh air. The exceeding portion of the fresh air over essential air change is considered as unnecessary and will result in more energy consumption.

Analysis and Conclusion Based on Current Simulation Results

Simulation input:

Dimension: L/W/H=30.48m/30.48m/6.1m (100ft/100ft/20ft)
Air Change Requirement: 0/0.5/1/1.5 Air Change Per Hour
Leakage: 0.2 Air Change Per Hour
Simulation Duration: 24 hours
Indoor Temperature Setting: 18.33℃ (65°F)
HTHV CFM: 3,500 CFM
Indirect fired heater efficiency: 80%
Direct fired heater efficiency: 92%

1. Heating System Comparison (Constant Air Flow Rate for Direct Fired Heater)

1.1 Systematic Energy Efficiency

Figure 1 and 2 show the systematic energy efficiency comparison between indirect and direct fired heating system

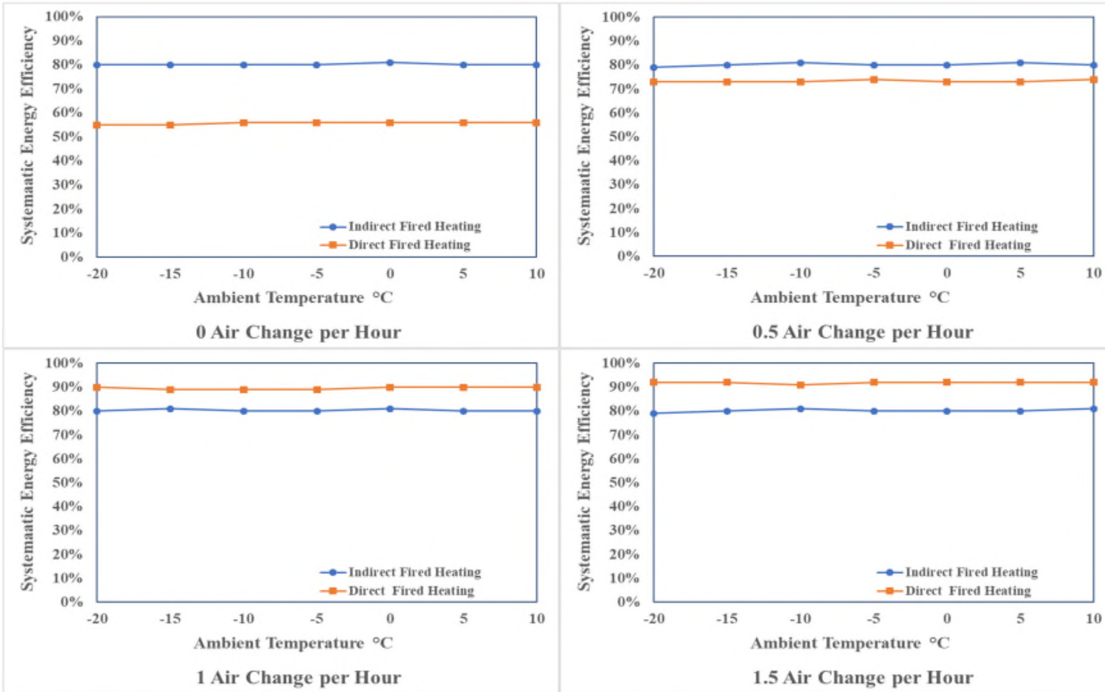

Figure 1: Systematic energy efficiency vs. outdoor temperature under different air change requirement

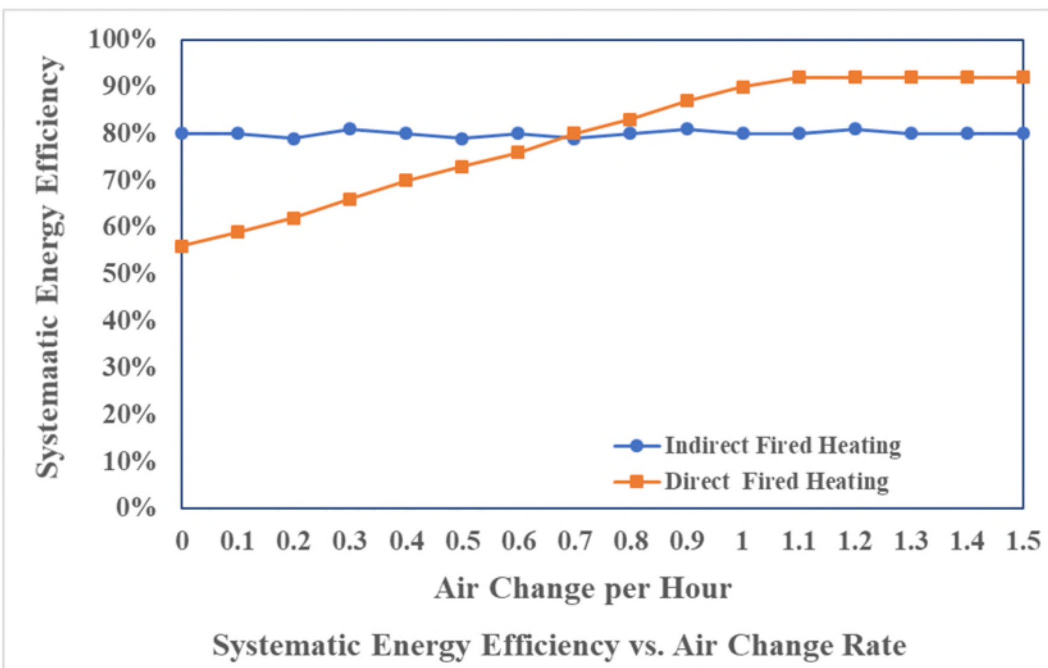

Figure 2: Systematic energy efficiency vs. air change requirement

1.2 System Natural Gas Demand

Figure 3 show the natural gas demand comparison between indirect and direct fired heating system

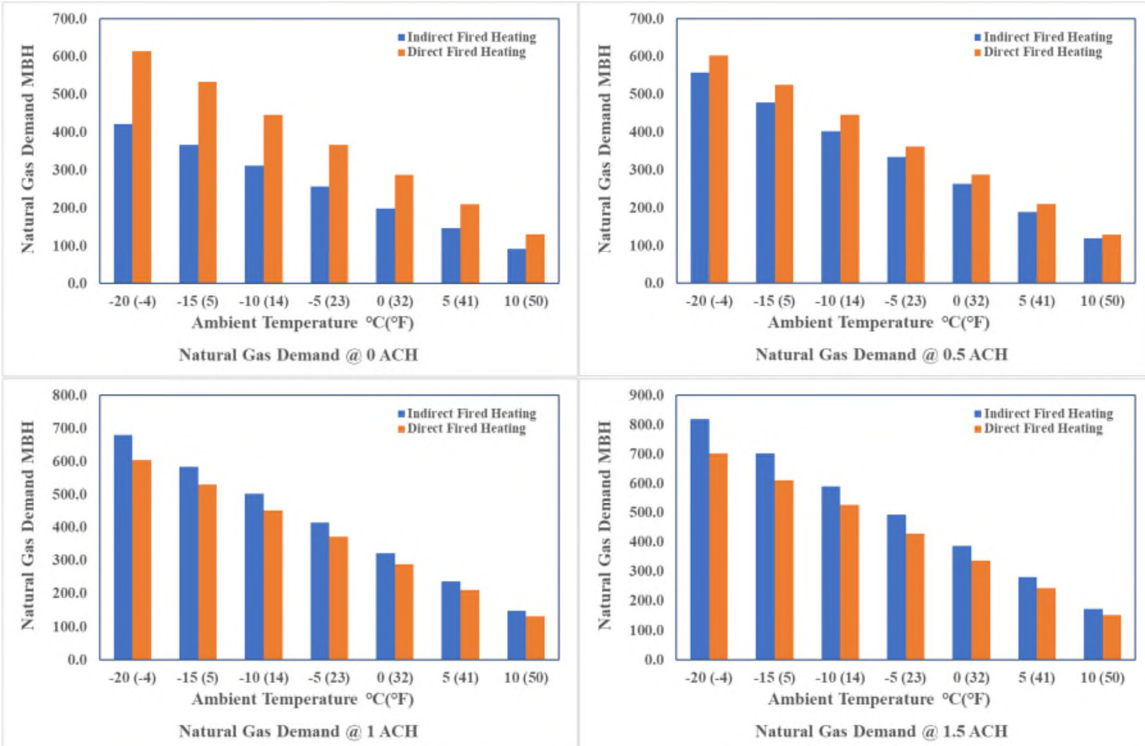

Figure 3: Natural gas demand vs. outdoor temperature under different air change requirement

1.3 Conclusion

1) For indirect fired heating system, the systematic energy efficiency remains constant at different outdoor air temperature and air change requirement. The Systematic efficiency is equal to the heater efficiency.
2) For direct fired heating system under constant air flow rate condition, the systematic energy efficiency remains constant at different outdoor air temperature. Systematic energy efficiency increases as air change requirement goes higher and will finally reach the heater efficiency and maintain.
3) There is a inflection point related to air change requirement. Below this point, indirect fired heating system is more efficient. Above this point, direct fired heating system is more efficient.
4) The point will be different according to different building type (heat loss coefficient, air change requirement)
5) At low air change requirement, indirect fired heating system has lower natural gas demand. As required air change rate rises, natural gas demand of direct fired heating system will decrease. When the air change requirement is higher than a inflection point, the natural gas demand of direct fired heating system will become lower than indirect fired heating system.

2. Heating System Comparison (Constant Supply Air Temperature for Direct Fired Heater).

2.1 Systematic Energy Efficiency

The systematic energy efficiencies of direct fired heating system at certain supply air temperature are shown in Table 1 and Figure 4. Figure 5 shows the comparison at different supply air temperatures. For initial comparison purposes, the calculation results done by Thermo-Cycler are also included.

Table 1a: Systematic energy efficiency of direct fired heating system at 160°F supply air temperature at variable air change

160°F Supply T	Ambient T °C (°F)								
	-23.3 (-10)	-20.6 (-5)	-17.8 (0)	-13.6 (7.5)	-9.4 (15)	-5.3 (22.5)	-1.1 (30)	3.1 (37.5)	7.2 (45)
0 Air Change	50.7%	51.8%	53.4%	55.8%	59.6%	62.6%	66.6%	70.7%	75.0%
0.25 Air Change	58.4%	59.7%	62.0%	64.6%	68.7%	72.4%	76.7%	80.9%	85.6%
0.5 Air Change	66.0%	67.5%	70.6%	73.4%	77.8%	82.2%	86.7%	91.1%	92.1%
0.75 Air Change	73.9%	75.7%	78.8%	81.8%	86.0%	89.4%	92.0%	91.6%	92.1%
1 Air Change	81.8%	83.9%	87.0%	90.2%	91.9%	92.0%	91.9%	92.0%	92.0%
1.25 Air Change	90.2%	92.0%	91.8%	91.9%	92.0%	92.1%	92.0%	92.1%	92.1%
1.5 Air Change	92.0%	92.0%	91.9%	91.9%	91.9%	92.0%	92.1%	92.1%	92.0%
Thermo-Cycler Calculation @ 0 Air Change			54.6%		60.3%		67.2%		76.0%

Table 1b: Systematic energy efficiency of direct fired heating system at 140°F supply air temperature at variable air change

140°F Supply T	Ambient T °C (°F)								
	-23.3 (-10)	-20.6 (-5)	-17.8 (0)	-13.6 (7.5)	-9.4 (15)	-5.3 (22.5)	-1.1 (30)	3.1 (37.5)	7.2 (45)
0 Air Change	45.0%	46.5%	48.1%	50.8%	54.3%	58.0%	63.0%	68.0%	74.0%
0.25 Air Change	51.5%	53.2%	55.5%	58.2%	62.1%	66.0%	71.2%	76.2%	82.7%

0.5 Air Change	59.1%	61.2%	63.4%	67.2%	71.2%	75.4%	80.9%	86.1%	91.9%
0.75 Air Change	66.1%	68.1%	70.9%	74.8%	79.6%	84.6%	90.7%	92.0%	92.0%
1 Air Change	73.1%	75.0%	78.4%	82.4%	87.9%	91.7%	91.8%	92.0%	92.1%
1.25 Air Change	80.1%	82.0%	85.1%	89.6%	92.0%	91.9%	92.0%	92.1%	92.0%
1.5 Air Change	87.0%	89.0%	91.7%	92.0%	91.9%	91.8%	92.0%	91.9%	92.0%

Table 1c: Systematic energy efficiency of direct fired heating system at 120°F supply air temperature at variable air change

120°F Supply T	**Ambient T °C (°F)**								
	-23.3 (-10)	-20.6 (-5)	-17.8 (0)	-13.6 (7.5)	-9.4 (15)	-5.3 (22.5)	-1.1 (30)	3.1 (37.5)	7.2 (45)
0 Air Change	39.1%	40.6%	42.3%	45.1%	48.4%	52.0%	56.4%	61.5%	67.6%
0.25 Air Change	45.0%	46.8%	48.7%	52.0%	55.7%	59.9%	65.0%	70.9%	77.9%
0.5 Air Change	51.0%	52.9%	55.2%	58.9%	63.1%	67.9%	73.6%	80.3%	88.2%
0.75 Air Change	56.9%	59.1%	61.6%	65.7%	70.5%	75.8%	82.1%	89.7%	91.8%
1 Air Change	62.9%	65.3%	68.0%	72.6%	77.8%	83.7%	90.7%	92.0%	92.0%
1.25 Air Change	68.8%	71.5%	74.5%	79.5%	85.2%	91.6%	91.8%	92.1%	92.0%
1.5 Air Change	74.8%	77.7%	80.9%	86.4%	91.9%	92.0%	92.0%	92.1%	92.0%

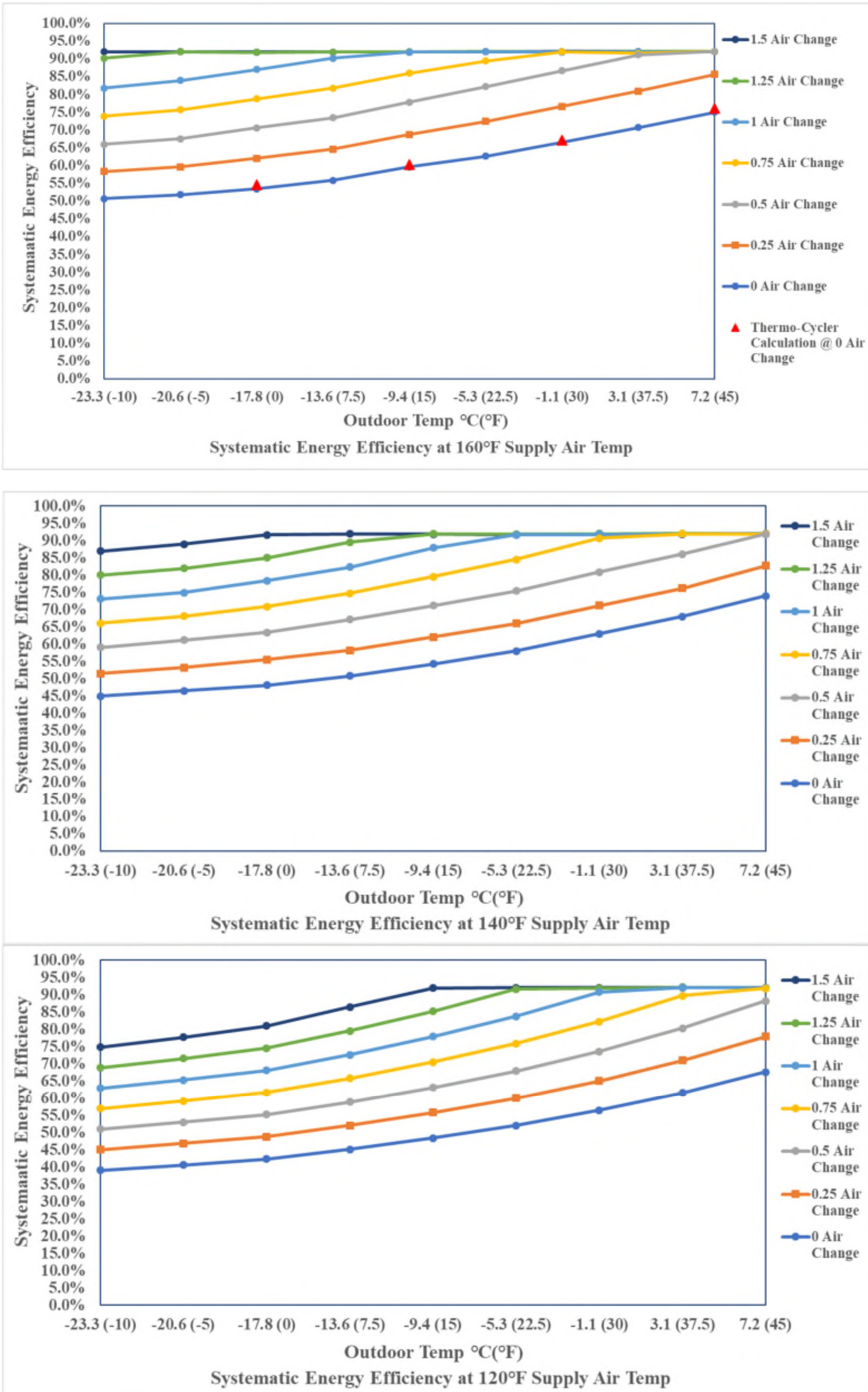

Figure 4: Systematic energy efficiency for direct fired heating system vs. outdoor air temperature under different air change requirement (160°F/140°F/120°F supply air temp)

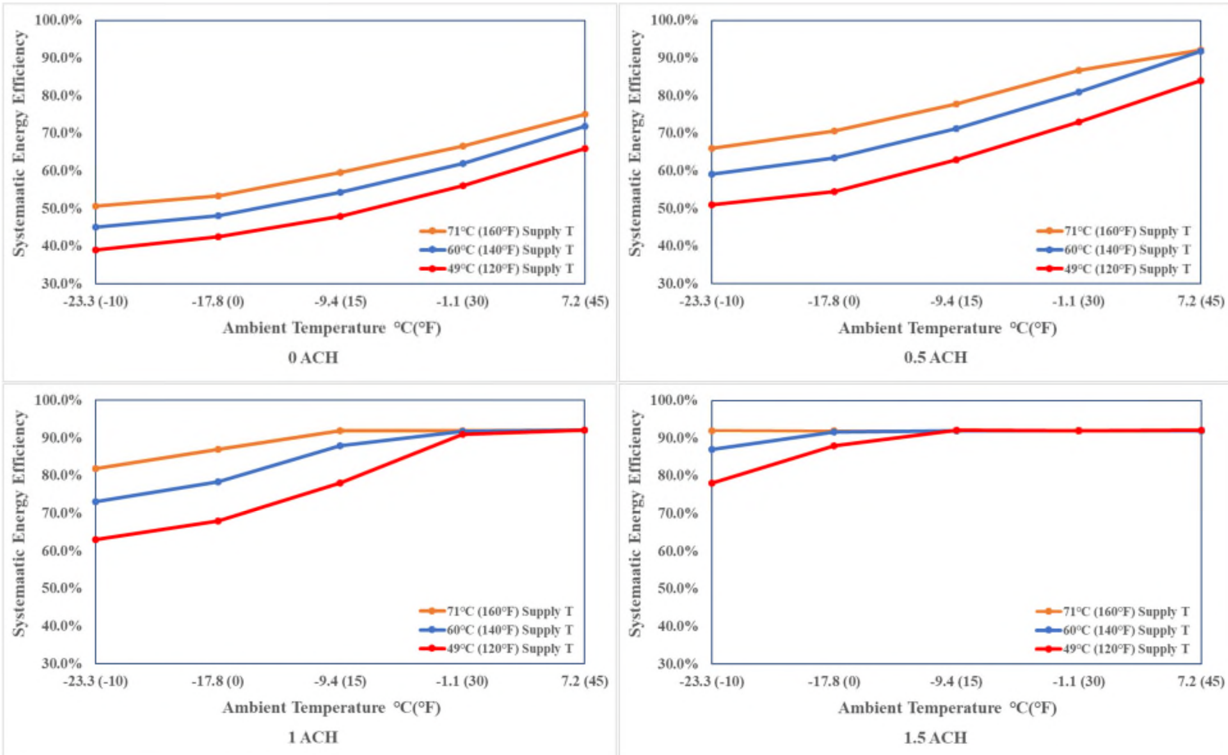

Figure 5: Systematic energy efficiency for direct fired heating system vs. outdoor air temperature under different supply air temperature

Figure 6 shows the air flow rate comparison between different supply air temperatures under various ambient temperatures.

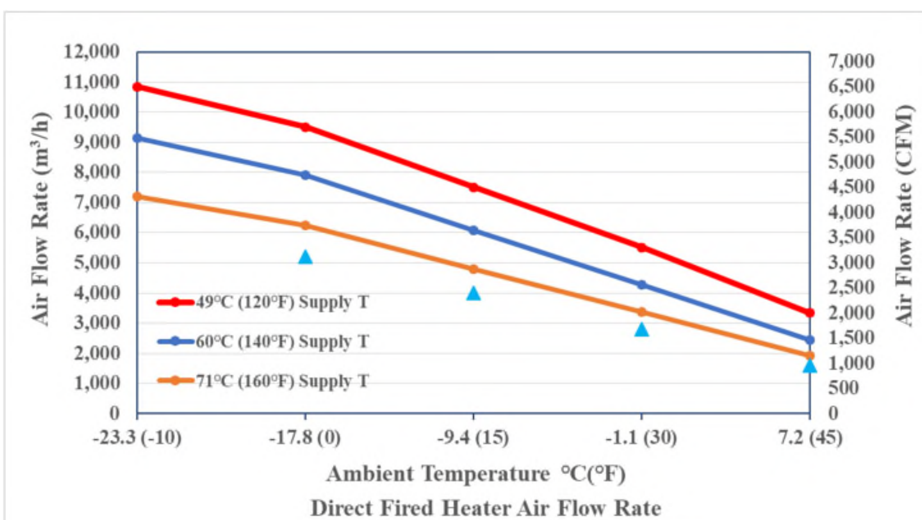

Figure 6: Direct fired heater air flow rate vs. outdoor air temperature

2.2 Natural Gas Demand

The natural gas demand of indirect and direct fired heating system at certain supply air temperature are shown in Table 2.

Table 2a: Natural gas demand of indirect fired heating system at variable air change

NG Demand of Indirect Fired Heating (MBH)	Ambient T °C (°F)								
	-23.3 (-10)	-20.6 (-5)	-17.8 (0)	-13.6 (7.5)	-9.4 (15)	-5.3 (22.5)	-1.1 (30)	3.1 (37.5)	7.2 (45)
0 Air Change	458.7	429.0	398.1	351.8	305.5	260.4	214.1	167.8	122.6
0.25 Air Change	528.6	494.3	458.7	405.4	352.1	300.0	246.7	193.4	141.3
0.5 Air Change	598.5	559.6	519.4	459.0	398.6	339.7	279.3	218.9	160.0
0.75 Air Change	668.3	625.0	580.0	512.6	445.2	379.4	311.9	244.5	178.7
1 Air Change	738.2	690.3	640.7	566.2	491.7	419.0	344.5	270.1	197.4
1.25 Air Change	808.1	755.7	701.3	619.8	538.3	458.7	377.2	295.6	216.0
1.5 Air Change	878.0	821.0	762.0	673.4	584.8	498.3	409.8	321.2	234.7

Table 2b: Natural gas demand of direct fired heating system at 160°F supply air temperature at variable air change

NG Demand of Direct Fired Heating@160°F Supply T (MBH)	Ambient T °C (°F)								
	-23.3 (-10)	-20.6 (-5)	-17.8 (0)	-13.6 (7.5)	-9.4 (15)	-5.3 (22.5)	-1.1 (30)	3.1 (37.5)	7.2 (45)
0 Air Change	713.7	648.3	583.3	491.1	405.3	327.8	254.7	188.0	129.1
0.25 Air Change	713.7	648.3	583.3	491.1	405.3	327.8	254.7	188.0	129.1
0.5 Air Change	713.7	648.3	583.3	491.1	405.3	327.8	254.7	190.4	139.1
0.75 Air Change	713.7	648.3	583.3	491.1	405.3	329.9	271.2	212.6	155.4
1 Air Change	713.7	648.3	583.3	492.3	427.6	364.4	299.6	234.8	171.6
1.25 Air Change	713.7	657.1	609.8	538.9	468.1	398.9	328.0	257.1	187.9
1.5 Air Change	763.4	713.9	662.6	585.6	508.5	433.3	356.3	279.3	204.1

Table 2c: Natural gas demand of direct fired heating system at 140°F supply air temperature at variable air change

NG Demand of Direct Fired Heating@140°F Supply T (MBH)	Ambient T °C (°F)								
	-23.3 (-10)	-20.6 (-5)	-17.8 (0)	-13.6 (7.5)	-9.4 (15)	-5.3 (22.5)	-1.1 (30)	3.1 (37.5)	7.2 (45)
0 Air Change	796.8	721.0	645.9	540.0	442.2	354.5	272.8	199.1	135.0
0.25 Air Change	796.8	720.9	645.8	540.0	442.2	354.5	272.8	199.1	135.0
0.5 Air Change	796.8	720.9	645.8	539.9	442.2	354.5	272.8	199.1	139.1
0.75 Air Change	796.7	720.9	645.8	539.9	442.2	354.5	272.8	212.6	155.4
1 Air Change	796.7	720.9	645.8	539.9	442.1	364.4	299.6	234.8	171.6
1.25 Air Change	796.7	720.9	645.8	539.9	468.1	398.9	328.0	257.1	187.9
1.5 Air Change	796.7	720.9	662.6	585.6	508.5	433.3	356.3	279.3	204.1

Table 2d: Natural gas demand of direct fired heating system at 120°F supply air temperature at variable air change

NG Demand of Direct Fired Heating@120°F Supply T (MBH)	Ambient T °C (°F)								
	-23.3 (-10)	-20.6 (-5)	-17.8 (0)	-13.6 (7.5)	-9.4 (15)	-5.3 (22.5)	-1.1 (30)	3.1 (37.5)	7.2 (45)
0 Air Change	939.4	845.6	753.2	623.8	505.4	400.5	303.8	218.2	145.2
0.25 Air Change	939.3	845.6	753.2	623.8	505.4	400.4	303.8	218.2	145.2
0.5 Air Change	939.3	845.6	753.2	623.8	505.4	400.4	303.8	218.2	145.2
0.75 Air Change	939.3	845.6	753.2	623.8	505.4	400.4	303.8	218.2	155.7
1 Air Change	939.3	845.6	753.2	623.8	505.4	400.4	303.8	234.8	171.6
1.25 Air Change	939.3	845.6	753.2	623.8	505.4	400.4	328.7	256.8	187.9
1.5 Air Change	939.3	845.6	753.2	623.8	509.1	433.3	356.3	279.0	204.1

Figure 7 and 8 show the natural gas demand of indirect and direct fired heating systems charts at different conditions.

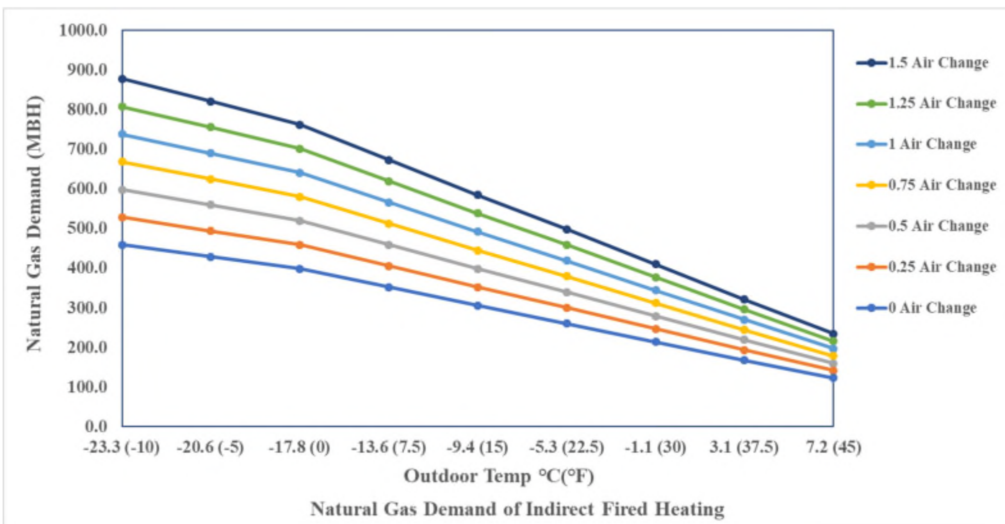

Figure 7: Natural gas demand for indirect fired heating system vs. outdoor air temperature under different air change requirement

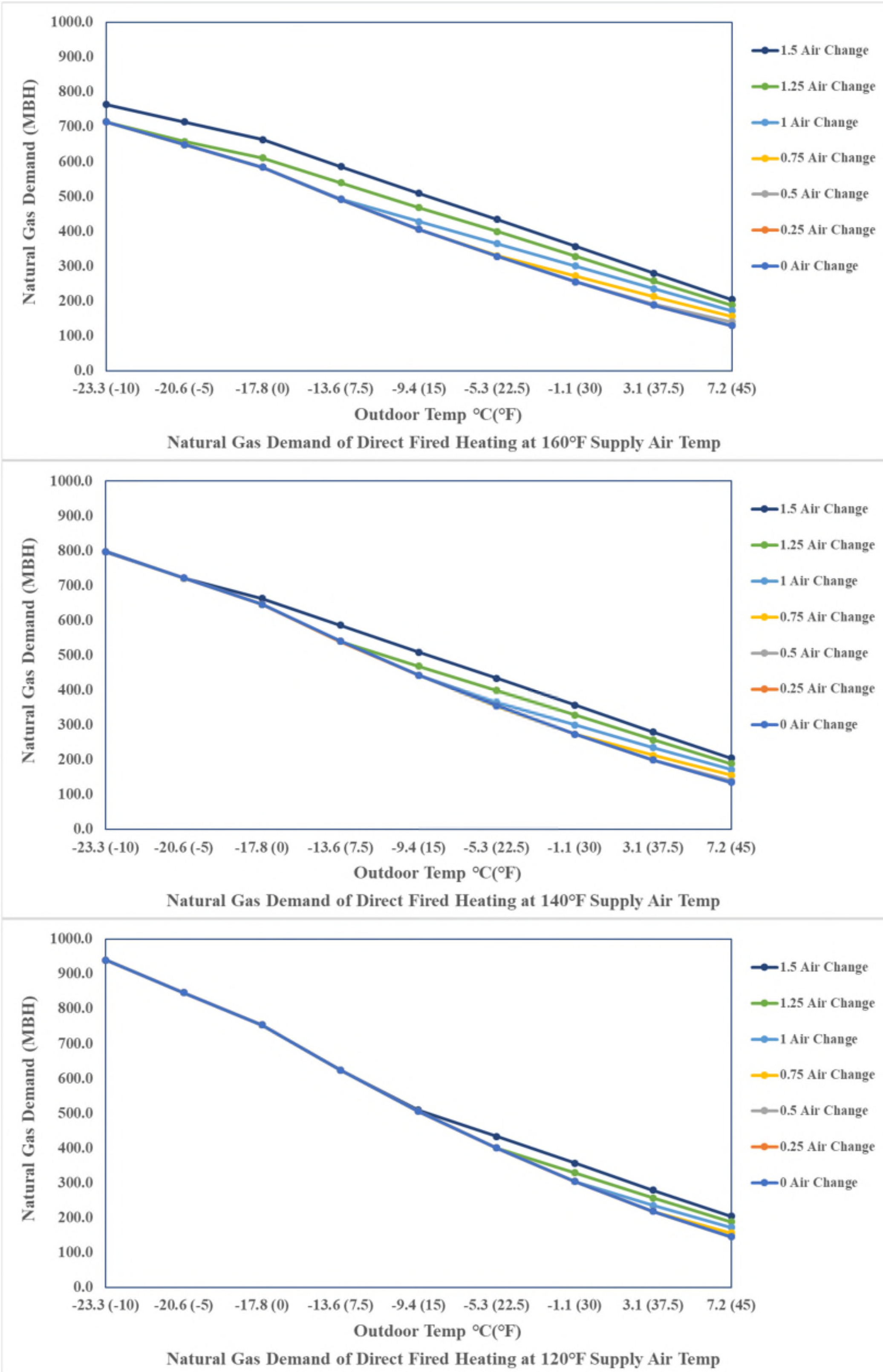

Figure 8: Natural gas demand for direct fired heating system vs. outdoor air temperature under different air change requirement (160°F/140°F/120°F supply air temp)

Figure 9 shows comparison in natural gas demand between indirect and direct fired heating systems.

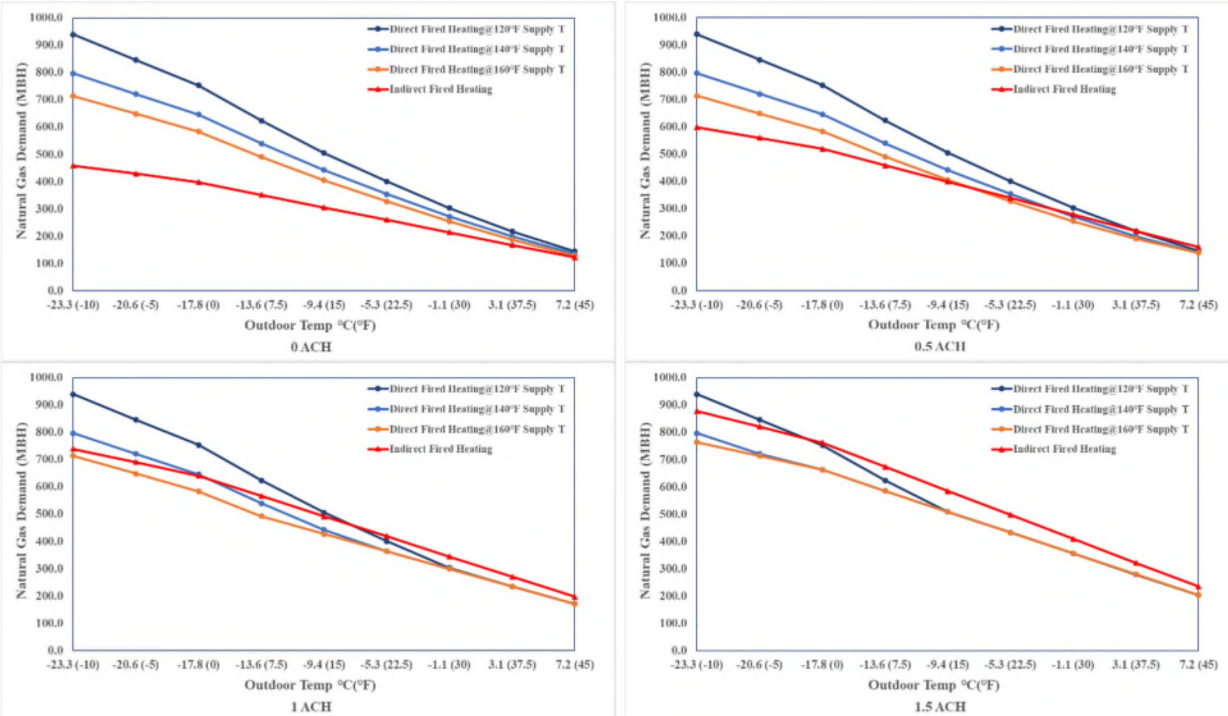

Figure 9: Natural gas demand comparison between direct fired heating system

2.3 Conclusion

1) For direct fired heating system at constant air flow rate:
    - Under low air change requirement, the systematic energy efficiency will decrease as the outdoor temperature drops.
    - As the air change requirement increases, the systematic energy efficiency will increase and maintain at heater efficiency.
2) The higher the supply air temperature is, the higher the systematic energy efficiency of direct fired heating system will be.
3) At low air change requirement, the systematic energy efficiency of direct fired heating system will be much lower than the rated heater efficiency at low ambient temperature.
4) If maintain constant supply air temperature, at lower ambient temperature, the air flow rate will be higher. The air flow rate will be higher at lower supply air temperature setting.
5) For indirect fired heating system, the natural gas demand will increase as the ambient temperature drops and air change requirement rises.
6) For direct fired heating system, at low ambient temperature and low air change requirement, the gas demand remains constant under different air change requirement. But when the ambient temperature is higher than a point, high air change requirement will result in higher demand.
7) At low ambient temperature and low air change requirement, the low supply air temperature direct fired heating system has higher gas demand. As the ambient

temperate or air change requirement increases, the gas demand of direct fired heating system under different supply air temperature will finally be the same.

8) At low ambient temperature and low air change requirement, indirect fired heating system has lower gas demand compared to direct fired heating system. As the ambient temperate or air change requirement increases, the gas demand of direct fired heating system will drop more rapidly than indirect fired heating system that the gas demand of direct fired heating system will become lower.

Evaluate the Systematic Energy Efficiency of Direct Fired Heating System

The following methods can be used to evaluate the systematic energy efficiency of a certain direct fired heating system under a certain outdoor air temperature (constant supply air temperature).

1. By Equations

The following equations can be used to calculate the systematic energy efficiency for direct fired heating system.

For a certain building which needs heating, the heat loss through the building envelope can be calculated as:

$$\dot{Q}_{envelope} = (U_{walls} \times A_{walls} + U_{roof} \times A_{roof}) \times (T_{in} - T_{out}) \tag{3}$$

Where,
$\dot{Q}_{envelope}$ is the heat loss through envelope, W (Btu/h)
U_{walls} is the overall thermal transmittance of walls, W/(m^2 K) (Btu/(ft^2 h °F))
U_{roof} is the overall thermal transmittance of roof, W/(m^2 K) (Btu/(ft^2 h °F))
A_{walls} is the area of walls, m^2 (ft^2)
A_{roof} is the area of roof, m^2 (ft^2)
T_{in} is the indoor temperature, ℃ (°F)
T_{out} is the outdoor (ambient) temperature, ℃ (°F)

The heat loss through essential air change can be calculated as:

$$\dot{Q}_{air\ change} = c_p \times \dot{m}_{air\ change} \times (T_{in} - T_{out}) \tag{4}$$

$$\dot{m}_{air\ change} = ACH \times \frac{V \times \rho}{3600} \tag{5}$$

Where,
$\dot{Q}_{air\ change}$ is the heat loss through essential air change, W (Btu/h)
c_p is the isobaric specific heat of air, J/(kg K) (Btu/(lbm °F))
$\dot{m}_{air\ change}$ is the mass flow rate of required air change, kg/s (lbm/s)
ACH is the air change per hour

V is the volume of the building space, m^3 (ft^3)
ρ is the air density, kg/m^3 (lbm/ft^3)

So,

$$Heating\ Load = \dot{Q}_{envelope} + \dot{Q}_{air\ change} \tag{6}$$

Now we need to calculate the actual natural gas consumption. The energy input rate can be calculated as:

$$\dot{Q}_{input} = c_p \times \dot{m} \times (T_{supply} - T_{out}) \tag{7}$$

Where,
$\dot{m}$ is the air mass flow rate of heater, kg/s (lbm/s)
T_{supply} is the supply air temperature of the heater, °C (°F)

According to energy balance in this system, $\dot{Q}_{input}$ should be equal to heat load if $\dot{m}$ is excat the same as $\dot{m}_{air\ change}$. Then we can get a result of $\dot{m}$.

In different scenario, $\dot{m}_{air\ change}$ could be different. When the given $\dot{m}_{air\ change}$ is lower than the value we calculated in the previous procedure, it means the heater provides more fresh air than what is required. So use the following equation to calculate the systematic energy efficiency:

$$\eta_{SYS} = \frac{Heating\ Load}{\dot{Q}_{input}/\eta_{heater}} = \frac{\dot{Q}_{envelope} + c_p \times \dot{m}_{air\ change} \times (T_{in} - T_{out})}{c_p \times \dot{m} \times (T_{supply} - T_{out})/\eta_{heater}} \tag{8}$$

Where,
η_{heater} is the heater furnace efficiency

When the given $\dot{m}_{air\ change}$ is higher than the value we calculated in the previous procedure, it means the heater provides less fresh air than what is required. So use the following equation to recalculate the $\dot{m}$:

$$c_p \times \dot{m} \times \left(T_{supply} - T_{out}\right) = \dot{Q}_{envelope} + c_p \times \dot{m}_{air\ change} \times (T_{in} - T_{out}) \tag{9}$$

Then the systematic energy efficiency will be:

$$\eta_{SYS} = \frac{Heating\ Load}{\dot{Q}_{input}/\eta_{heater}} = \frac{\dot{Q}_{envelope} + c_p \times \dot{m}_{air\ change} \times (T_{in} - T_{out})}{c_p \times \dot{m} \times (T_{supply} - T_{out})/\eta_{heater}} = \eta_{heater} \tag{10}$$

It means when the required air change flow rate is beyond the air flow rate of the direct fired heater, the systematic energy efficiency will be the same as the heater furnace efficiency.

2. By Chart and Table

We can also use charts and table to look up the systematic energy efficiency under certain condition.

First, we need to calculate the heat loss coefficient through building envelope and the volume flow rate of required air change by the following equations:

$$Heat\ Loss\ Coefficient = (U_{walls} \times A_{walls} + U_{roof} \times A_{roof}) \tag{11}$$

$$Volume\ Flow\ Rate\ of\ Required\ Air\ Change = \frac{V \times ACH}{3600} \tag{12}$$

With the calculated heat loss coefficient through building envelope and the volume flow rate of required air change, as well as the selected supply air temperature, we can use Table A1 in the appendix to look up the systematic energy efficiency for the direct fired heating system. Table A1 can be used for 65°F (18.3°C) space temperature setting.

Below charts show results for an example of 500 W/K (948 Btu/(h °F)) heat loss coefficient, 160°F/140°F/120°F supply air temperature.

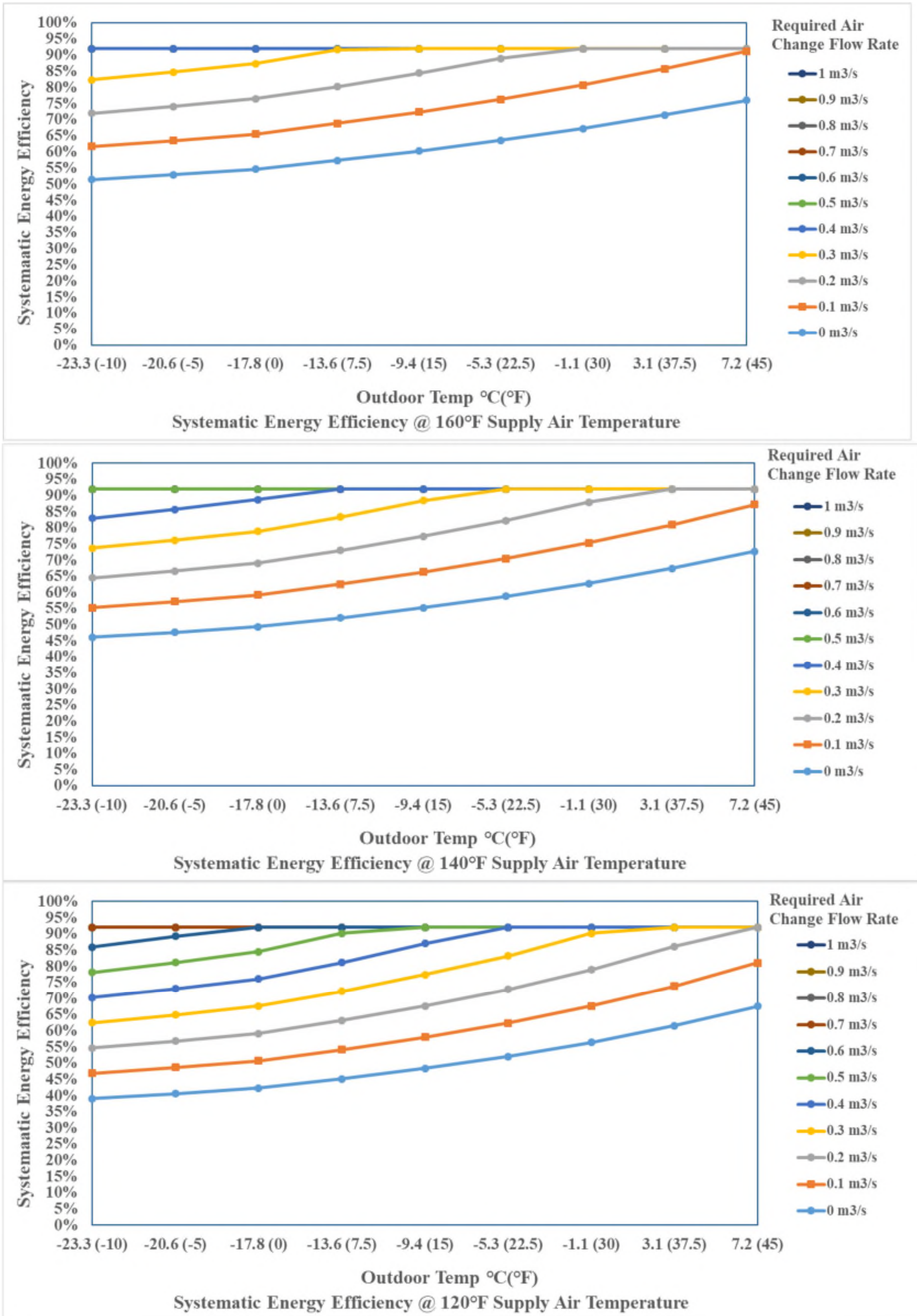

Figure 6: Systmeatic energy efficiency for direct fired heating system @ 500 W/K (948 Btu/(h °F)) heat loss coefficient

Appendix

Table A1: Direct Fired heating systematic energy efficiency under different conditions (65°F space temperature setting)

Heat Loss Coefficient Through Envelope		Direct Fired Heater Supply Air Temperature		Air Change Requirement		Ambient T °C (°F)								
W/K	Btu/(h °F)	°C	°F	m3/s	CFM	-23.3 (-10)	-20.6 (-5)	-17.8 (0)	-13.6 (7.5)	-9.4 (15)	-5.3 (22.5)	-1.1 (30)	3.1 (37.5)	7.2 (45)
500	948	71	160	0	0	51.4%	52.9%	54.6%	57.3%	60.3%	63.5%	67.2%	71.4%	76.0%
				0.1	212	61.7%	63.5%	65.5%	68.8%	72.4%	76.3%	80.7%	85.7%	91.2%
				0.2	424	72.0%	74.1%	76.4%	80.2%	84.4%	89.0%	92.0%	92.0%	92.0%
				0.3	636	82.3%	84.7%	87.4%	91.7%	92.0%	92.0%	92.0%	92.0%	92.0%
				0.4	848	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				0.5	1,060	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				0.6	1,271	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				0.7	1,483	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				0.8	1,695	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				0.9	1,907	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				1	2,119	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
		60	140	0	0	46.1%	47.6%	49.3%	52.1%	55.3%	58.8%	62.8%	67.4%	72.7%
				0.1	212	55.3%	57.1%	59.2%	62.6%	66.3%	70.5%	75.3%	80.9%	87.2%
				0.2	424	64.5%	66.6%	69.0%	73.0%	77.4%	82.3%	87.9%	92.0%	92.0%
				0.3	636	73.7%	76.2%	78.9%	83.4%	88.4%	92.0%	92.0%	92.0%	92.0%
				0.4	848	82.9%	85.7%	88.8%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				0.5	1,060	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				0.6	1,271	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				0.7	1,483	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				0.8	1,695	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				0.9	1,907	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				1	2,119	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
		49	120	0	0	39.1%	40.6%	42.3%	45.1%	48.4%	52.0%	56.4%	61.5%	67.6%
				0.1	212	46.9%	48.7%	50.7%	54.1%	58.0%	62.4%	67.7%	73.8%	81.1%
				0.2	424	54.7%	56.8%	59.2%	63.2%	67.7%	72.8%	78.9%	86.1%	92.0%
				0.3	636	62.5%	64.9%	67.7%	72.2%	77.4%	83.2%	90.2%	92.0%	92.0%
				0.4	848	70.3%	73.0%	76.1%	81.2%	87.1%	92.0%	92.0%	92.0%	92.0%
				0.5	1,060	78.1%	81.2%	84.6%	90.2%	92.0%	92.0%	92.0%	92.0%	92.0%
				0.6	1,271	85.9%	89.3%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				0.7	1,483	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				0.8	1,695	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				0.9	1,907	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				1	2,119	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
1,000	1,896	71	160	0	0	51.4%	52.9%	54.6%	57.3%	60.3%	63.5%	67.2%	71.4%	76.0%
				0.2	424	61.7%	63.5%	65.5%	68.8%	72.4%	76.3%	80.7%	85.7%	91.2%

				0.4	**848**	72.0%	74.1%	76.4%	80.2%	84.4%	89.0%	92.0%	92.0%	92.0%
				0.6	**1,271**	82.3%	84.7%	87.4%	91.7%	92.0%	92.0%	92.0%	92.0%	92.0%
				0.8	**1,695**	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				1	**2,119**	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				1.2	**2,543**	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				1.4	**2,967**	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				1.6	**3,390**	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				1.8	**3,814**	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				2	**4,238**	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				0	**0**	46.1%	47.6%	49.3%	52.1%	55.3%	58.8%	62.8%	67.4%	72.7%
				0.2	**424**	55.3%	57.1%	59.2%	62.6%	66.3%	70.5%	75.3%	80.9%	87.2%
				0.4	**848**	64.5%	66.6%	69.0%	73.0%	77.4%	82.3%	87.9%	92.0%	92.0%
				0.6	**1,271**	73.7%	76.2%	78.9%	83.4%	88.4%	92.0%	92.0%	92.0%	92.0%
				0.8	**1,695**	82.9%	85.7%	88.8%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
		60	**140**	**1**	**2,119**	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				1.2	**2,543**	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				1.4	**2,967**	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				1.6	**3,390**	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				1.8	**3,814**	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				2	**4,238**	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				0	**0**	39.1%	40.6%	42.3%	45.1%	48.4%	52.0%	56.4%	61.5%	67.6%
				0.2	**424**	46.9%	48.7%	50.7%	54.1%	58.0%	62.4%	67.7%	73.8%	81.1%
				0.4	**848**	54.7%	56.8%	59.2%	63.2%	67.7%	72.8%	78.9%	86.1%	92.0%
				0.6	**1,271**	62.5%	64.9%	67.7%	72.2%	77.4%	83.2%	90.2%	92.0%	92.0%
				0.8	**1,695**	70.3%	73.0%	76.1%	81.2%	87.1%	92.0%	92.0%	92.0%	92.0%
		49	**120**	**1**	**2,119**	78.1%	81.2%	84.6%	90.2%	92.0%	92.0%	92.0%	92.0%	92.0%
				1.2	**2,543**	85.9%	89.3%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				1.4	**2,967**	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				1.6	**3,390**	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				1.8	**3,814**	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				2	**4,238**	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				0	**0**	51.4%	52.9%	54.6%	57.3%	60.3%	63.5%	67.2%	71.4%	76.0%
				0.25	**530**	60.0%	61.8%	63.7%	66.9%	70.4%	74.1%	78.5%	83.3%	88.7%
				0.5	**1,060**	68.6%	70.6%	72.8%	76.4%	80.4%	84.7%	89.7%	92.0%	92.0%
				0.75	**1,589**	77.1%	79.4%	81.9%	86.0%	90.5%	92.0%	92.0%	92.0%	92.0%
				1	**2,119**	85.7%	88.2%	91.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
		71	**160**	**1.25**	**2,649**	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
1,500	**2,843**			**1.5**	**3,179**	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				1.75	**3,708**	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				2	**4,238**	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				2.25	**4,768**	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				2.5	**5,298**	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
		60	**140**	**0**	**0**	46.1%	47.6%	49.3%	52.1%	55.3%	58.8%	62.8%	67.4%	72.7%

				0.25	**530**	53.7%	55.5%	57.5%	60.8%	64.5%	68.5%	73.3%	78.7%	84.8%
				0.5	**1,060**	61.4%	63.5%	65.7%	69.5%	73.7%	78.3%	83.7%	89.9%	92.0%
				0.75	**1,589**	69.1%	71.4%	74.0%	78.2%	82.9%	88.1%	92.0%	92.0%	92.0%
				1	**2,119**	76.8%	79.3%	82.2%	86.9%	92.0%	92.0%	92.0%	92.0%	92.0%
				1.25	**2,649**	84.4%	87.3%	90.4%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				1.5	**3,179**	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				1.75	**3,708**	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				2	**4,238**	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				2.25	**4,768**	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				2.5	**5,298**	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				0	**0**	39.1%	40.6%	42.3%	45.1%	48.4%	52.0%	56.4%	61.5%	67.6%
				0.25	**530**	45.6%	47.3%	49.3%	52.6%	56.4%	60.7%	65.8%	71.8%	78.8%
				0.5	**1,060**	52.1%	54.1%	56.4%	60.2%	64.5%	69.4%	75.2%	82.0%	90.1%
				0.75	**1,589**	58.6%	60.9%	63.4%	67.7%	72.5%	78.0%	84.6%	92.0%	92.0%
				1	**2,119**	65.1%	67.6%	70.5%	75.2%	80.6%	86.7%	92.0%	92.0%	92.0%
		49	**120**	**1.25**	**2,649**	71.6%	74.4%	77.5%	82.7%	88.7%	92.0%	92.0%	92.0%	92.0%
				1.5	**3,179**	78.1%	81.2%	84.6%	90.2%	92.0%	92.0%	92.0%	92.0%	92.0%
				1.75	**3,708**	84.6%	87.9%	91.6%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				2	**4,238**	91.2%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				2.25	**4,768**	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				2.5	**5,298**	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				0	**0**	51.4%	52.9%	54.6%	57.3%	60.3%	63.5%	67.2%	71.4%	76.0%
				0.3	**636**	59.1%	60.9%	62.8%	65.9%	69.3%	73.1%	77.3%	82.1%	87.4%
				0.6	**1,271**	66.8%	68.8%	71.0%	74.5%	78.4%	82.6%	87.4%	92.0%	92.0%
				0.9	**1,907**	74.6%	76.7%	79.2%	83.1%	87.4%	92.0%	92.0%	92.0%	92.0%
				1.2	**2,543**	82.3%	84.7%	87.4%	91.7%	92.0%	92.0%	92.0%	92.0%	92.0%
		71	**160**	**1.5**	**3,179**	90.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				1.8	**3,814**	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				2.1	**4,450**	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				2.4	**5,086**	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				2.7	**5,721**	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				3	**6,357**	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
2,000	**3,791**			**0**	**0**	46.1%	47.6%	49.3%	52.1%	55.3%	58.8%	62.8%	67.4%	72.7%
				0.3	**636**	53.0%	54.7%	56.7%	59.9%	63.6%	67.6%	72.2%	77.5%	83.6%
				0.6	**1,271**	59.9%	61.9%	64.1%	67.8%	71.9%	76.4%	81.6%	87.7%	92.0%
				0.9	**1,907**	66.8%	69.0%	71.5%	75.6%	80.2%	85.2%	91.0%	92.0%	92.0%
				1.2	**2,543**	73.7%	76.2%	78.9%	83.4%	88.4%	92.0%	92.0%	92.0%	92.0%
		60	**140**	**1.5**	**3,179**	80.6%	83.3%	86.3%	91.2%	92.0%	92.0%	92.0%	92.0%	92.0%
				1.8	**3,814**	87.5%	90.4%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				2.1	**4,450**	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				2.4	**5,086**	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				2.7	**5,721**	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				3	**6,357**	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%

		49	**120**	**0**	**0**	39.1%	40.6%	42.3%	45.1%	48.4%	52.0%	56.4%	61.5%	67.6%
				0.3	**636**	44.9%	46.7%	48.6%	51.9%	55.6%	59.8%	64.8%	70.8%	77.7%
				0.6	**1,271**	50.8%	52.8%	55.0%	58.7%	62.9%	67.6%	73.3%	80.0%	87.8%
				0.9	**1,907**	56.6%	58.8%	61.3%	65.4%	70.1%	75.4%	81.7%	89.2%	92.0%
				1.2	**2,543**	62.5%	64.9%	67.7%	72.2%	77.4%	83.2%	90.2%	92.0%	92.0%
				1.5	**3,179**	68.4%	71.0%	74.0%	79.0%	84.6%	91.0%	92.0%	92.0%	92.0%
				1.8	**3,814**	74.2%	77.1%	80.3%	85.7%	91.9%	92.0%	92.0%	92.0%	92.0%
				2.1	**4,450**	80.1%	83.2%	86.7%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				2.4	**5,086**	85.9%	89.3%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				2.7	**5,721**	91.8%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				3	**6,357**	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
2,500	**4,739**	**71**	**160**	**0**	**0**	51.4%	52.9%	54.6%	57.3%	60.3%	63.5%	67.2%	71.4%	76.0%
				0.4	**848**	59.6%	61.4%	63.3%	66.5%	70.0%	73.7%	78.0%	82.8%	88.2%
				0.8	**1,695**	67.9%	69.9%	72.1%	75.6%	79.6%	83.9%	88.8%	92.0%	92.0%
				1.2	**2,543**	76.1%	78.3%	80.8%	84.8%	89.2%	92.0%	92.0%	92.0%	92.0%
				1.6	**3,390**	84.3%	86.8%	89.5%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				2	**4,238**	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				2.4	**5,086**	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				2.8	**5,933**	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				3.2	**6,781**	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				3.6	**7,628**	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				4	**8,476**	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
		60	**140**	**0**	**0**	46.1%	47.6%	49.3%	52.1%	55.3%	58.8%	62.8%	67.4%	72.7%
				0.4	**848**	53.4%	55.2%	57.2%	60.5%	64.1%	68.2%	72.8%	78.2%	84.3%
				0.8	**1,695**	60.8%	62.8%	65.1%	68.8%	73.0%	77.6%	82.9%	89.0%	92.0%
				1.2	**2,543**	68.2%	70.4%	73.0%	77.1%	81.8%	87.0%	92.0%	92.0%	92.0%
				1.6	**3,390**	75.5%	78.1%	80.9%	85.5%	90.7%	92.0%	92.0%	92.0%	92.0%
				2	**4,238**	82.9%	85.7%	88.8%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				2.4	**5,086**	90.3%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				2.8	**5,933**	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				3.2	**6,781**	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				3.6	**7,628**	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				4	**8,476**	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
		49	**120**	**0**	**0**	39.1%	40.6%	42.3%	45.1%	48.4%	52.0%	56.4%	61.5%	67.6%
				0.4	**848**	45.3%	47.1%	49.0%	52.3%	56.1%	60.3%	65.4%	71.4%	78.4%
				0.8	**1,695**	51.6%	53.6%	55.8%	59.6%	63.8%	68.7%	74.4%	81.2%	89.2%
				1.2	**2,543**	57.8%	60.1%	62.6%	66.8%	71.6%	77.0%	83.4%	91.1%	92.0%
				1.6	**3,390**	64.1%	66.6%	69.3%	74.0%	79.3%	85.3%	92.0%	92.0%	92.0%
				2	**4,238**	70.3%	73.0%	76.1%	81.2%	87.1%	92.0%	92.0%	92.0%	92.0%
				2.4	**5,086**	76.6%	79.5%	82.9%	88.4%	92.0%	92.0%	92.0%	92.0%	92.0%
				2.8	**5,933**	82.8%	86.0%	89.6%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				3.2	**6,781**	89.1%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				3.6	**7,628**	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%

				4	**8,476**	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				0	**0**	51.4%	52.9%	54.6%	57.3%	60.3%	63.5%	67.2%	71.4%	76.0%
				0.5	**1,060**	60.0%	61.8%	63.7%	66.9%	70.4%	74.1%	78.5%	83.3%	88.7%
				1	**2,119**	68.6%	70.6%	72.8%	76.4%	80.4%	84.7%	89.7%	92.0%	92.0%
				1.5	**3,179**	77.1%	79.4%	81.9%	86.0%	90.5%	92.0%	92.0%	92.0%	92.0%
				2	**4,238**	85.7%	88.2%	91.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
		71	**160**	**2.5**	**5,298**	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				3	**6,357**	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				3.5	**7,417**	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				4	**8,476**	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				4.5	**9,536**	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				5	**10,595**	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				0	**0**	46.1%	47.6%	49.3%	52.1%	55.3%	58.8%	62.8%	67.4%	72.7%
				0.5	**1,060**	53.7%	55.5%	57.5%	60.8%	64.5%	68.5%	73.3%	78.7%	84.8%
				1	**2,119**	61.4%	63.5%	65.7%	69.5%	73.7%	78.3%	83.7%	89.9%	92.0%
				1.5	**3,179**	69.1%	71.4%	74.0%	78.2%	82.9%	88.1%	92.0%	92.0%	92.0%
				2	**4,238**	76.8%	79.3%	82.2%	86.9%	92.0%	92.0%	92.0%	92.0%	92.0%
3,000	**5,687**	**60**	**140**	**2.5**	**5,298**	84.4%	87.3%	90.4%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				3	**6,357**	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				3.5	**7,417**	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				4	**8,476**	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				4.5	**9,536**	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				5	**10,595**	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				0	**0**	39.1%	40.6%	42.3%	45.1%	48.4%	52.0%	56.4%	61.5%	67.6%
				0.5	**1,060**	45.6%	47.3%	49.3%	52.6%	56.4%	60.7%	65.8%	71.8%	78.8%
				1	**2,119**	52.1%	54.1%	56.4%	60.2%	64.5%	69.4%	75.2%	82.0%	90.1%
				1.5	**3,179**	58.6%	60.9%	63.4%	67.7%	72.5%	78.0%	84.6%	92.0%	92.0%
				2	**4,238**	65.1%	67.6%	70.5%	75.2%	80.6%	86.7%	92.0%	92.0%	92.0%
		49	**120**	**2.5**	**5,298**	71.6%	74.4%	77.5%	82.7%	88.7%	92.0%	92.0%	92.0%	92.0%
				3	**6,357**	78.1%	81.2%	84.6%	90.2%	92.0%	92.0%	92.0%	92.0%	92.0%
				3.5	**7,417**	84.6%	87.9%	91.6%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				4	**8,476**	91.2%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				4.5	**9,536**	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				5	**10,595**	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				0	**0**	51.4%	52.9%	54.6%	57.3%	60.3%	63.5%	67.2%	71.4%	76.0%
				0.75	**1,589**	62.4%	64.3%	66.3%	69.6%	73.2%	77.2%	81.7%	86.7%	92.0%
				1.5	**3,179**	73.4%	75.6%	78.0%	81.9%	86.1%	90.8%	92.0%	92.0%	92.0%
				2.25	**4,768**	84.5%	87.0%	89.7%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
3,500	**6,634**	**71**	**160**	**3**	**6,357**	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				3.75	**7,946**	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				4.5	**9,536**	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				5.25	**11,125**	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				6	**12,714**	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%

				6.75	**14,303**	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				7.5	**15,893**	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				0	**0**	46.1%	47.6%	49.3%	52.1%	55.3%	58.8%	62.8%	67.4%	72.7%
				0.75	**1,589**	55.9%	57.8%	59.9%	63.3%	67.1%	71.3%	76.2%	81.9%	88.2%
				1.5	**3,179**	65.8%	68.0%	70.4%	74.5%	79.0%	83.9%	89.7%	92.0%	92.0%
				2.25	**4,768**	75.7%	78.2%	81.0%	85.6%	90.8%	92.0%	92.0%	92.0%	92.0%
				3	**6,357**	85.5%	88.4%	91.6%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
		60	**140**	**3.75**	**7,946**	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				4.5	**9,536**	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				5.25	**11,125**	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				6	**12,714**	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				6.75	**14,303**	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				7.5	**15,893**	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				0	**0**	39.1%	40.6%	42.3%	45.1%	48.4%	52.0%	56.4%	61.5%	67.6%
				0.75	**1,589**	47.4%	49.3%	51.3%	54.8%	58.7%	63.2%	68.5%	74.7%	82.0%
				1.5	**3,179**	55.8%	58.0%	60.4%	64.5%	69.1%	74.3%	80.5%	87.9%	92.0%
				2.25	**4,768**	64.2%	66.7%	69.5%	74.1%	79.5%	85.5%	92.0%	92.0%	92.0%
				3	**6,357**	72.5%	75.4%	78.5%	83.8%	89.8%	92.0%	92.0%	92.0%	92.0%
		49	**120**	**3.75**	**7,946**	80.9%	84.1%	87.6%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				4.5	**9,536**	89.3%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				5.25	**11,125**	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				6	**12,714**	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				6.75	**14,303**	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				7.5	**15,893**	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				0	**0**	51.4%	52.9%	54.6%	57.3%	60.3%	63.5%	67.2%	71.4%	76.0%
				0.75	**1,589**	61.1%	62.9%	64.8%	68.1%	71.6%	75.5%	79.9%	84.8%	90.2%
				1.5	**3,179**	70.7%	72.8%	75.1%	78.8%	82.9%	87.4%	92.0%	92.0%	92.0%
				2.25	**4,768**	80.3%	82.7%	85.3%	89.5%	92.0%	92.0%	92.0%	92.0%	92.0%
				3	**6,357**	90.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
		71	**160**	**3.75**	**7,946**	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				4.5	**9,536**	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				5.25	**11,125**	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				6	**12,714**	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
4,000	**7,582**			**6.75**	**14,303**	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				7.5	**15,893**	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				0	**0**	46.1%	47.6%	49.3%	52.1%	55.3%	58.8%	62.8%	67.4%	72.7%
				0.75	**1,589**	54.7%	56.5%	58.6%	61.9%	65.6%	69.8%	74.6%	80.1%	86.3%
				1.5	**3,179**	63.3%	65.4%	67.8%	71.7%	76.0%	80.8%	86.3%	92.0%	92.0%
		60	**140**	**2.25**	**4,768**	72.0%	74.4%	77.0%	81.4%	86.4%	91.8%	92.0%	92.0%	92.0%
				3	**6,357**	80.6%	83.3%	86.3%	91.2%	92.0%	92.0%	92.0%	92.0%	92.0%
				3.75	**7,946**	89.2%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				4.5	**9,536**	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				5.25	**11,125**	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%

				6	**12,714**	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				6.75	**14,303**	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				7.5	**15,893**	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				0	**0**	39.1%	40.6%	42.3%	45.1%	48.4%	52.0%	56.4%	61.5%	67.6%
				0.75	**1,589**	46.4%	48.2%	50.2%	53.6%	57.4%	61.8%	66.9%	73.1%	80.2%
				1.5	**3,179**	53.7%	55.8%	58.1%	62.0%	66.5%	71.5%	77.5%	84.6%	92.0%
				2.25	**4,768**	61.0%	63.4%	66.1%	70.5%	75.6%	81.3%	88.1%	92.0%	92.0%
				3	**6,357**	68.4%	71.0%	74.0%	79.0%	84.6%	91.0%	92.0%	92.0%	92.0%
		49	**120**	**3.75**	**7,946**	75.7%	78.6%	81.9%	87.4%	92.0%	92.0%	92.0%	92.0%	92.0%
				4.5	**9,536**	83.0%	86.2%	89.8%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				5.25	**11,125**	90.3%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				6	**12,714**	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				6.75	**14,303**	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				7.5	**15,893**	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				0	**0**	51.4%	52.9%	54.6%	57.3%	60.3%	63.5%	67.2%	71.4%	76.0%
				0.75	**1,589**	60.0%	61.8%	63.7%	66.9%	70.4%	74.1%	78.5%	83.3%	88.7%
				1.5	**3,179**	68.6%	70.6%	72.8%	76.4%	80.4%	84.7%	89.7%	92.0%	92.0%
				2.25	**4,768**	77.1%	79.4%	81.9%	86.0%	90.5%	92.0%	92.0%	92.0%	92.0%
				3	**6,357**	85.7%	88.2%	91.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
		71	**160**	**3.75**	**7,946**	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				4.5	**9,536**	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				5.25	**11,125**	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				6	**12,714**	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				6.75	**14,303**	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				7.5	**15,893**	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				0	**0**	46.1%	47.6%	49.3%	52.1%	55.3%	58.8%	62.8%	67.4%	72.7%
				0.75	**1,589**	53.7%	55.5%	57.5%	60.8%	64.5%	68.5%	73.3%	78.7%	84.8%
				1.5	**3,179**	61.4%	63.5%	65.7%	69.5%	73.7%	78.3%	83.7%	89.9%	92.0%
4,500	**8,530**			**2.25**	**4,768**	69.1%	71.4%	74.0%	78.2%	82.9%	88.1%	92.0%	92.0%	92.0%
				3	**6,357**	76.8%	79.3%	82.2%	86.9%	92.0%	92.0%	92.0%	92.0%	92.0%
		60	**140**	**3.75**	**7,946**	84.4%	87.3%	90.4%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				4.5	**9,536**	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				5.25	**11,125**	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				6	**12,714**	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				6.75	**14,303**	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				7.5	**15,893**	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				0	**0**	39.1%	40.6%	42.3%	45.1%	48.4%	52.0%	56.4%	61.5%	67.6%
				0.75	**1,589**	45.6%	47.3%	49.3%	52.6%	56.4%	60.7%	65.8%	71.8%	78.8%
				1.5	**3,179**	52.1%	54.1%	56.4%	60.2%	64.5%	69.4%	75.2%	82.0%	90.1%
		49	**120**	**2.25**	**4,768**	58.6%	60.9%	63.4%	67.7%	72.5%	78.0%	84.6%	92.0%	92.0%
				3	**6,357**	65.1%	67.6%	70.5%	75.2%	80.6%	86.7%	92.0%	92.0%	92.0%
				3.75	**7,946**	71.6%	74.4%	77.5%	82.7%	88.7%	92.0%	92.0%	92.0%	92.0%
				4.5	**9,536**	78.1%	81.2%	84.6%	90.2%	92.0%	92.0%	92.0%	92.0%	92.0%

				5.25	**11,125**	84.6%	87.9%	91.6%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				6	**12,714**	91.2%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				6.75	**14,303**	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				7.5	**15,893**	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				0	**0**	51.4%	52.9%	54.6%	57.3%	60.3%	63.5%	67.2%	71.4%	76.0%
				0.75	**1,589**	59.1%	60.9%	62.8%	65.9%	69.3%	73.1%	77.3%	82.1%	87.4%
				1.5	**3,179**	66.8%	68.8%	71.0%	74.5%	78.4%	82.6%	87.4%	92.0%	92.0%
				2.25	**4,768**	74.6%	76.7%	79.2%	83.1%	87.4%	92.0%	92.0%	92.0%	92.0%
				3	**6,357**	82.3%	84.7%	87.4%	91.7%	92.0%	92.0%	92.0%	92.0%	92.0%
		71	**160**	**3.75**	**7,946**	90.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				4.5	**9,536**	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				5.25	**11,125**	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				6	**12,714**	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				6.75	**14,303**	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				7.5	**15,893**	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				0	**0**	46.1%	47.6%	49.3%	52.1%	55.3%	58.8%	62.8%	67.4%	72.7%
				0.75	**1,589**	53.0%	54.7%	56.7%	59.9%	63.6%	67.6%	72.2%	77.5%	83.6%
				1.5	**3,179**	59.9%	61.9%	64.1%	67.8%	71.9%	76.4%	81.6%	87.7%	92.0%
				2.25	**4,768**	66.8%	69.0%	71.5%	75.6%	80.2%	85.2%	91.0%	92.0%	92.0%
				3	**6,357**	73.7%	76.2%	78.9%	83.4%	88.4%	92.0%	92.0%	92.0%	92.0%
5,000	**9,478**	**60**	**140**	**3.75**	**7,946**	80.6%	83.3%	86.3%	91.2%	92.0%	92.0%	92.0%	92.0%	92.0%
				4.5	**9,536**	87.5%	90.4%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				5.25	**11,125**	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				6	**12,714**	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				6.75	**14,303**	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				7.5	**15,893**	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				0	**0**	39.1%	40.6%	42.3%	45.1%	48.4%	52.0%	56.4%	61.5%	67.6%
				0.75	**1,589**	44.9%	46.7%	48.6%	51.9%	55.6%	59.8%	64.8%	70.8%	77.7%
				1.5	**3,179**	50.8%	52.8%	55.0%	58.7%	62.9%	67.6%	73.3%	80.0%	87.8%
				2.25	**4,768**	56.6%	58.8%	61.3%	65.4%	70.1%	75.4%	81.7%	89.2%	92.0%
				3	**6,357**	62.5%	64.9%	67.7%	72.2%	77.4%	83.2%	90.2%	92.0%	92.0%
		49	**120**	**3.75**	**7,946**	68.4%	71.0%	74.0%	79.0%	84.6%	91.0%	92.0%	92.0%	92.0%
				4.5	**9,536**	74.2%	77.1%	80.3%	85.7%	91.9%	92.0%	92.0%	92.0%	92.0%
				5.25	**11,125**	80.1%	83.2%	86.7%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				6	**12,714**	85.9%	89.3%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				6.75	**14,303**	91.8%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%
				7.5	**15,893**	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%	92.0%