Appendix DD
Public Health and Safety Data

Stirling Energy Systems Solar One Project HRA Calculations		
Cancer Risk Calculations - PMI		
Total Project PM_{10} annual emission rate	8.30E-05	g/s
AERMOD Maximum annual PM_{10} concentration using actual emission rate	0.00014	$\mu g/m^3$
Inhalation Cancer Potency Factor for diesel particulate matter (from OEHHA) is	1.10E+00	$(mg/kg\text{-}day)^{-1}$
Inhalation dose (mg/kg-day) = (Annual conc) * DBR * A * EF * ED * 1e-6 / AT		
DBR = daily breathing rate (L/kg-day), used 95th percentile	393	L/kg-day
A = Inhalation absorption factor (fraction of chemical absorbed), default	1	
EF = Exposure frequency (days/year)	365	days/year
ED = Exposure duration (years), default	70	years
AT = Averaging time period over which exposure is averaged (days), default	25550	days
(e.g., 25,550 days for 70 year cancer risk)		
Inhalation dose (mg/kg-day) =	5.42E-08	mg/kg-day
Inhalation cancer risk = (Inhalation dose) * (cancer potency factor)	5.97E-08	
Inhalation cancer risk =	0.060	in a million
Chronic Non-cancer Hazard Index Calculations - PMI		
Total Project PM_{10} annual emission rate	8.30E-05	g/s
AERMOD Maximum annual PM_{10} concentration using actual emission rate	0.00014	$\mu g/m^3$
Diesel particulate matter chronic reference exposure level (REL) from OEHHA	5	$\mu g/m^3$
Chronic Non-cancer Hazard Index (HI)	0.00003	

Stirling Energy Systems Solar One Project HRA Calculations		
Cancer Risk Calculations - Sensitive Receptor 1		
Total Project PM_{10} annual emission rate	8.30E-05	g/s
AERMOD Maximum annual PM_{10} concentration using actual emission rate	1.60E-06	$\mu g/m^3$
Inhalation Cancer Potency Factor for diesel particulate matter (from OEHHA) is	1.10E+00	$(mg/kg\text{-}day)^{-1}$
Inhalation dose (mg/kg-day) = (Annual conc) * DBR * A * EF * ED * 1e-6 / AT		
DBR = daily breathing rate (L/kg-day), used 95th percentile	393	L/kg-day
A = Inhalation absorption factor (fraction of chemical absorbed), default	1	
EF = Exposure frequency (days/year)	365	days/year
ED = Exposure duration (years), default	70	years
AT = Averaging time period over which exposure is averaged (days), default	25550	days
(e.g., 25,550 days for 70 year cancer risk)		
Inhalation dose (mg/kg-day) =	6.29E-10	mg/kg-day
Inhalation cancer risk = (Inhalation dose) * (cancer potency factor)	6.92E-10	
Inhalation cancer risk =	0.001	in a million
Chronic Non-cancer Hazard Index Calculations - Sensitive Receptor 1		
Total Project PM_{10} annual emission rate	8.30E-05	g/s
AERMOD Maximum annual PM_{10} concentration using actual emission rate	1.60E-06	$\mu g/m^3$
Diesel particulate matter chronic reference exposure level (REL) from OEHHA	5	$\mu g/m^3$
Chronic Non-cancer Hazard Index (HI)	3.20E-07	

Stirling Energy Systems Solar One Project HRA Calculations		
Cancer Risk Calculations - Sensitive Receptor 2		
Total Project PM_{10} annual emission rate	8.30E-05	g/s
AERMOD Maximum annual PM_{10} concentration using actual emission rate	3.39E-06	$\mu g/m^3$
Inhalation Cancer Potency Factor for diesel particulate matter (from OEHHA) is	1.10E+00	$(mg/kg\text{-}day)^{-1}$
Inhalation dose (mg/kg-day) = (Annual conc) * DBR * A * EF * ED * 1e-6 / AT		
DBR = daily breathing rate (L/kg-day), used 95th percentile	393	L/kg-day
A = Inhalation absorption factor (fraction of chemical absorbed), default	1	
EF = Exposure frequency (days/year)	365	days/year
ED = Exposure duration (years), default	70	years
AT = Averaging time period over which exposure is averaged (days), default	25550	days
(e.g., 25,550 days for 70 year cancer risk)		
Inhalation dose (mg/kg-day) =	1.33E-09	mg/kg-day
Inhalation cancer risk = (Inhalation dose) * (cancer potency factor)	1.47E-09	
Inhalation cancer risk =	0.001	in a million
Chronic Non-cancer Hazard Index Calculations - Sensitive Receptor 2		
Total Project PM_{10} annual emission rate	8.30E-05	g/s
AERMOD Maximum annual PM_{10} concentration using actual emission rate	3.39E-06	$\mu g/m^3$
Diesel particulate matter chronic reference exposure level (REL) from OEHHA	5	$\mu g/m^3$
Chronic Non-cancer Hazard Index (HI)	6.78E-07	

Stirling Energy Systems Solar One Project HRA Calculations		
Cancer Risk Calculations - Sensitive Receptor 3		
Total Project PM_{10} annual emission rate	8.30E-05	g/s
AERMOD Maximum annual PM_{10} concentration using actual emission rate	7.78E-07	$\mu g/m^3$
Inhalation Cancer Potency Factor for diesel particulate matter (from OEHHA) is	1.10E+00	$(mg/kg\text{-}day)^{-1}$
Inhalation dose (mg/kg-day) = (Annual conc) * DBR * A * EF * ED * 1e-6 / AT		
DBR = daily breathing rate (L/kg-day), used 95th percentile	393	L/kg-day
A = Inhalation absorption factor (fraction of chemical absorbed), default	1	
EF = Exposure frequency (days/year)	365	days/year
ED = Exposure duration (years), default	70	years
AT = Averaging time period over which exposure is averaged (days), default	25550	days
(e.g., 25,550 days for 70 year cancer risk)		
Inhalation dose (mg/kg-day) =	3.06E-10	mg/kg-day
Inhalation cancer risk = (Inhalation dose) * (cancer potency factor)	3.36E-10	
Inhalation cancer risk =	3.36E-04	in a million
Chronic Non-cancer Hazard Index Calculations - Sensitive Receptor 3		
Total Project PM_{10} annual emission rate	8.30E-05	g/s
AERMOD Maximum annual PM_{10} concentration using actual emission rate	7.78E-07	$\mu g/m^3$
Diesel particulate matter chronic reference exposure level (REL) from OEHHA	5	$\mu g/m^3$
Chronic Non-cancer Hazard Index (HI)	1.56E-07	