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Project		Add-on Modules									
information and setup	HOMER Pro (main)	Advanced Load	Biomass	Hydro	Combined Heat and Power	Hydrogen	Advanced Grid	Advanced Storage	Multi- Year	ATLAB	
Locate project on map	~										
View system schematic	~										
AC and DC buses	✓										
Copy component from model to library	~										
Linked sensitivities	✓										
International currency and number formats	~										
Paid license users can disable ads	~										
Compare scenarios	~										
Hybrid power system design wizard	~										
	HOMER Pro	Advanced Biomass Hydro Hydrogen Hydrogen Advanced Advanced Multi-Martand Hydrogen Advanced Storage Vear MATLAB									
Components	(main)	Advanced Load	Biomass	Hydro	Heat and Power	Hydrogen	Advanced Grid	Advanced Storage	Multi- Year	ATLAB	
Microgrid Controller											
Custom control algorithms in MATLAB										~	
Use others' custom MATLAB algorithms										~	
Use commercial controllers developed with the C++ SDK	~										
Generator Order dispatch	~										
Cycle charging dispatch	~										
Load following dispatch	~										
Compare economics between different controllers and controller	~										

settings						
Generators	Up to 20					
Auto-sizing generator	✓					
Capital and replacement cost	S					
Operations and maintenance cost	S					
Maintenance scheduling	~					
Operational scheduling	~					
Lifetime	S (hours)					
Fuel curve	~					
Emissions factors	~					
Solar PV Arrays	Up to 10					
Capital and replacement cost	s					
Туре	Flat plate or concentrating					
Lifetime	S (years)					
Derating factor	V					
Dedicated converter	Inverter or maximum power point tracker					
Temperature effects	s					
Tracking, slope, azimuth	S					
Wind Turbine	2					
Improved wind turbine model builder	~					
Capital and replacement cost	S					
Lifetime	S (years)					
Hub height	S					
Losses	V (7 types)					
Scheduled turbine maintenance	✓					
Batteries	Up to 10					
Improved battery model builder	~					
Conventional	~					
Zinc	~					
Vanadium	✓					
Capital and replacement cost	s					
Initial state of charge	S					
Minimum state of charge	s					
Lifetime throughput	s					
Enforce or model minimum life	~					
Degradation (Modified Kinetic Battery Model)					~	
Temperature effects (Modified Kinetic Battery					~	

Matel)dependent losses (Modified Kinetic Battery Model)						~	
Flywheel	1						
Capital and replacement cost	s						
Lifetime	S						
DC/AC converter	1						
Capital and replacement cost	S						
Lifetime	S (years)						
Efficiency	s						
Grid	~						
Grid power price	V						
Grid sellback price	V						
Sale capacity	V						
Net metering	✓						
Real-time rates					~		
Scheduled rates (time of use)					~		
Grid extension					~		
Scheduled and unscheduled grid outages					~		
Demand charges					~		
Peak shaving					~		
Hydrokinetic	~						
Capital and replacement cost	S						
Lifetime	S (years)						
Power curve	✓						
Hydro			~				
Capital and replacement cost			S				
Operations and maintenance cost			s				
Lifetime			S (years)				
Available turbine head			s				
Design flow rate			S				
Minimum flow rate			s				
Maximum flow rate			s				
Efficiency			S				
Pipe head loss			S				
Boiler				~			
Fuel types				8			
Fuel price				S			
Efficiency				S			
Emissions				V			
Thermal load controller (dump load)				✓			

Capital and					S			
replacement CLStetime					S			
					(years)			
Reformer						~		
Capital and replacement cost						S		
Operations and maintenance cost						S		
Lifetime						S (years)		
Efficiency						S		
Hydrogen delivery cost						S (\$/kg/km)		
Electrolyzer						~		
Capital and replacement cost						S		
Operations and maintenance cost						S		
Lifetime						S (years)		
Efficiency						S		
Minimum load ratio						S		
Hydrogen tank						~		
Capital and replacement cost						S		
Operations and maintenance cost						s		
Set initial tank level						S		
Option to require year-end tank level to equal or exceed initial level						~		
Hydrogen fuel cell						~		
Capital and replacement cost						s		
Operations and maintenance cost						S		
Maintenance scheduling						S		
Operational scheduling						S		
Lifetime						S (years)		
Fuel curve						✓		
Loads	HOMER Pro (main)	Advanced Load	Biomass	Hydro	Combined	-on Module Hydrogen	Advanced Storage	Multi- Year MATLAB
Electrical Load	1	2			2			
Scaled annual average	s							
Variability	V							
Deferrable Load		1						
Scaled annual average		s						
Storage capacity		S						
Peak		S						
Minimum load		S						
		3						

Tahermal Load					2				
Scaled annual average					s				
Variability					V				
Hydrogen Load						1			
Scaled annual						S			
average									
Variability Penalties for						V			
unmet load						~			
Load inputs	~								
Easy data entry with typical load profiles	~				Thermal				
Import data	~				Thermal				
Read from library	~				Thermal				
Build from measured data	~				Thermal				
Resources	HOMER Pro				Add Combined	-on Module			
NESUUI CES	(main)	Advanced Load	Biomass	Hydro	Heat and Power	Hydrogen	Advanced Grid	Advanced Storage	Multi- Year MATLAE
Fuels	Diesel, ethanol, methanol, natural gas, biogas, gasoline, propane, biodiesel, hydrogen, and custom user-defined								
Fuel price	S								
Solar GHI	Download from Internet or import								
Scaled annual	S								
average Solar DNI									
Scaled annual	Import								
average	S								
Wind	Download from Internet or import								
Scaled annual average	S								
Surface roughness	S								
Temperature	Download from Internet or import								
Scaled annual average	S								
Biomass			Import or enter						
Scaled annual average			s						
Average price			S						
Carbon content			S						
Gasification ratio			S						
Lower heating value			s						
Hydro				Import or enter					
Scaled annual average				s					
Hydrokinetic	Import or enter								

Scaled annual average	S								
					Add	-on Module	S		
System Control	HOMER Pro (main)	Advanced Load	Biomass	Hydro	Combined Heat and Power	Hydrogen	Advanced Grid	Advanced Storage	Multi- Year MATLAB
Time step size	1 to 60 minutes								
Fuel minimization option	✓								
Weight minimization option	~								
Dispatch strategies	2								
					Add	- I-on Module	S		
Results	HOMER Pro (main)	Advanced Load	Biomass	Hydro	Combined Heat and Power	Hydrogen	Advanced Grid	Advanced Storage	Multi- Year MATLAB
Results tables	✓				Tower				
Sensitivity table	✓								
Optimization table	~								
Sort results on any metric	✓								
Filter results on any metric	~								
Choose results to display	~								
Cost summary	✓								
Comparative economics for IRR and ROI	~								
Cash flow - General electrical outputs	~								
Outputs for each component	~								
Summary report and export	~								
Time series plot, scatter plot, delta plot, table, time series data export	~								
Emissions	✓								
Results Graphical Displays	~								
Optimal system type plot	~								
Surface plot	✓								
Line plot	✓								
Spider plot	✓								
Optimization plot	~								
Optimization surface plot	~								
Multi-year Results									✓
Year-by-year results									✓
Yearly plot									✓
Results recycling	✓								
Economics					A44	 -on Module	S		
-conomice	HOMER Pro				Combined			Advanced	Multi-
sensitivity variables	(main)	Advanced Load	Biomass	Hydro	Heat and Power	Hydrogen	Grid	Storage	Multi- Year MATLAB

Expected inflation rate	~								
Project lifetime	~								
System fixed capital costs	~								
System fixed O&M costs	~								
Capacity shortage penalty	~								
					Add	on Module	S		
Emissions	HOMER Pro (main)	Advanced Load	Biomass	Hydro	Combined Heat and Power	Hydrogen	Advanced Grid	Advanced Storage	Multi- Year MATLAB
Carbon dioxide	✓								
Carbon monoxide	✓								
Unburned hydrocarbons	~								
Particulate matter	✓								
Sulfur dioxide	~								
Nitrogen oxides	~								
					Add	-on Module	S		
Constraints	HOMER Pro (main)	Advanced Load	Biomass	Hydro	Combined Heat and Power	Hydrogen	Advanced Grid	Advanced Storage	Multi- Year MATLAB
Maximum annual capacity shortage (%)	~								
Minimum renewable fraction (%)	~								
Operating reserve (as % of: current load, peak, solar, wind)	~								

S - Sensitivity variable

V - Single value user-defined variable

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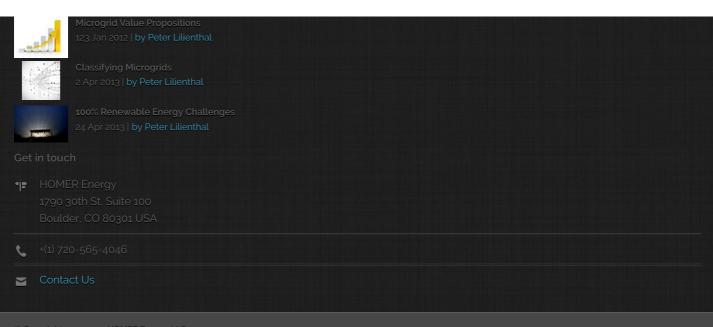
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