

## Energy Modeling Job Aide

### 1) Project Assessment: Get to know the job

- ❑ Review the project file, plans, emails and any notes.
- ❑ Complete an intake form, being sure to confirm climate zone and zip code (required for HERS registration).
- ❑ Review the scope of work, clear up any questions and/or alternative compliance features/options, create talking points to have with client.
- ❑ Determine compliance path and goals.
  - *What are the goals (min. compliance, Reach Code, Green Point Rated, LEED for Homes, PV electric usage summary, load calculations, etc.)?*
  - *What type of job is this? (New construction; Existing plus alteration (E+A); Existing plus alteration plus addition (E+A+A); Addition alone.*
  - *What compliance path will fit this job best (performance or prescriptive)? Why?*

### 2) Gather and Organize Information: Project Take-Offs

- ❑ Determine/map out zones.
- ❑ Measure the area in square feet (SF) of conditioned versus unconditioned floor area, and exterior/demising floors, walls, roof/ceilings, windows, doors.
- ❑ Write out the project areas by the zone and room. Use the Project Information Worksheet to gather and organize take-offs.

### 3) Model the Project: EnergyPro or CBECC-Res

- ❑ Model take offs (DHW, HVAC, Zones -- walls, floor, roof, windows, doors, orientation).
- ❑ Run the model.
- ❑ Use the Project Information Worksheet to verify modeling inputs (Look at the report for obvious errors such as rotation and number of bedrooms).

### 4) Analysis and Review

- ❑ Use the Project Information Worksheet to review the Certificate of Compliance (CF1R) for input errors.
- ❑ Does the Model comply?
  - Yes, Review the report for errors and proceed in creating Energy Compliance Summary.
  - No. Make adjustments based on findings to get to compliance. Make one adjustment at a time, and keep a list of each item changed and the compliance model that resulted until you get a model that complies.
- ❑ Write up the Energy Features Summary.

## Single-Family INTAKE FORM

## TITLE 24 PART 6 ENERGY COMPLIANCE

Bid: \$	Date In:	Date Out:	Job #:
<b>Designer:</b>		<b>Owner:</b>	
Phone:	E-Mail:	Phone:	E-Mail:
Address:		Address:	
<b>Project Title:</b>			
<b>Address:</b>		City:	Zip code:
City / Building Dept.:		CZ:	
<b>Occupancy:</b> <i>Single family / ADU detached / ADU attached / Duplex / Townhome</i>			
<b>Scope of work:</b> <i>New construction / single family addition / ADU addition / alteration</i>			
<b>Year of Home/Major Upgrades (if existing):</b>			
<b>Above Code (if applicable):</b> <i>GPR / LEED / Reach Code / Other:</i>			Compliance Goal:

## ENVELOPE ASSEMBLIES

<b>Roof Type #1 (new/altered/existing condition to be HERS verified):</b> <i>Type (Attic, Rafter, Other) / Framing Type (Wood, Metal, Other)</i> <i>Depth (2 x 4, 2 x 6, other)</i> <i>Spacing (16" OC, 24" OC, other)</i>	
<i>Cavity Ins At Ceiling: R-value, Thickness, Type (Batt, Spray, Blow, Other)</i> <i>Cavity Ins Below Roof Deck: R-value, Thickness, Type (Batt, Spray, Blow, Other)</i>	
<i>Continuous Ins (indicate location such as below or above roof deck) R-value, Thickness, Type (Batt, Spray, Blow, Other)</i>	
<i>Rad. Barrier: Y/N</i>	
<i>Roofing:</i> <i>Cool Roof: Y/N Roofing product/specs:</i> <i>Air space below roofing material: Y/N</i>	
<b>Roof Type #2 (new/altered/existing condition to be HERS verified):</b> <i>Type (Attic, Rafter, Other) / Framing Type (Wood, Metal, Other)</i> <i>Depth (2 x 4, 2 x 6, other)</i> <i>Spacing (16" OC, 24" OC, other)</i>	
<i>Cavity Ins At Ceiling: R-value, Thickness, Type (Batt, Spray, Blow, Other)</i> <i>Cavity Ins Below Roof Deck: R-value, Thickness, Type (Batt, Spray, Blow, Other)</i>	
<i>Continuous Ins (indicate location such as below or above roof deck) R-value, Thickness, Type (Batt, Spray, Blow, Other)</i>	
<i>Rad. Barrier: Y/N</i>	
<i>Roofing:</i> <i>Cool Roof: Y/N Roofing product/specs:</i> <i>Air space below roofing material: Y/N</i>	
<b>Wall Type #1 (new/altered/existing condition to be HERS verified)</b>	

<p>Type (framed, mass, SIPS, other) / Framing Type (Wood, Metal, Other)            Depth (2 x 4, 2 x 6, other)            Spacing (16" OC, 24" OC, other)</p>	
<p>Cavity Ins: R-value, Thickness, Type (Batt, Spray, Blow, Other)</p>	
<p>Continuous Ins (indicate location) R-value, Thickness, Type (Batt, Spray, Blow, Other)</p>	
<p><b>Wall Type #2 (new/altered/existing condition to be HERS verified)</b>            Type (framed, mass, SIPS, other) / Framing Type (Wood, Metal, Other)            Depth (2 x 4, 2 x 6, other)            Spacing (16" OC, 24" OC, other)</p>	
<p>Cavity Ins: R-value, Thickness, Type (Batt, Spray, Blow, Other)</p>	
<p>Continuous Ins:</p>	
<p><b>Floor Type #1 (new/altered/existing condition to be HERS verified):</b>            Type (raised with crawlspace, no crawlspace, raised mass, unheated/heated slab on grade, other)            Framing Type (Wood, Metal, Other)            Depth (2 x 4, 2 x 6, other)            Spacing (16" OC, 24" OC, other)</p>	
<p>Cavity Ins: R-value, Thickness, Type (Batt, Spray, Blow, Other)</p>	
<p>Slab Edge Continuous Ins (indicate location) R-value, Thickness, Type (Batt, Spray, Blow, Other)</p>	
<p><b>Vertical Glazing Type #1 (new/altered/existing condition to be HERS verified)</b>            Frame Type (wood, vinyl, metal;, thermally broken metal, other)            Glazing Type (single, dual, triple, clear, tinted, low-e coating)            Rating (manufactured NFRC product, custom NFRC certified, non-NFRC rated)            Manufacturer and series (if known)</p>	
<p>Shading (solid and attached overhangs, sidefins)            Elevation including shading (front, back left, right)</p>	
<p><b>Vertical Glazing Type #2 (new/altered/existing condition to be HERS verified)</b>            Frame Type (wood, vinyl, metal;, thermally broken metal, other)            Glazing Type (single, dual, triple, clear, tinted, low-e coating)            Rating (manufactured NFRC product, custom NFRC certified, non-NFRC rated)            Manufacturer and series (if known)</p>	
<p>Shading (solid and attached overhangs, sidefins)            Elevation including shading (front, back left, right)</p>	
<p><b>Skylight Type (new/altered/existing condition to be HERS verified)</b>            Frame Type (wood, vinyl, metal;, thermally broken metal, other)            Glazing Type (single, dual, triple, clear, tinted, low-e coating)            Manufacturer and series (if known)</p>	

## MECHANICAL EQUIPMENT

<p><b>Space Heating Type</b> (new/altered/existing condition to be HERS verified)          Fuel type (natural gas, propane, heat pump, electric resistance)          System Type (packaged, split, hydronic, other)          Output:          Efficiency:          # of systems and what areas of the home they are serving          Manufacturer and model # (if known)</p>	<p><i>If new construction and gas heater installed, heat pump ready requirements will be required</i></p>
<p><b>Space Cooling Type</b> (new/altered/existing condition to be HERS verified)          Fuel type (heat pump, central air conditioning, swamp/evaporative cooler)          System Type (packaged, split, hydronic, other)          Output:          Efficiency:          # of systems and what areas of the home they are serving          Manufacturer and model # (if known)</p>	
<p><b>Ducts</b> (new/altered/existing condition to be HERS verified)          Location (Attic, Crawlspace, Conditioned Space, Garage, None (Such as ductless mini split, hydronic radiant floor or baseboard))          Altering ducting: Extending from existing to serve an addition, replacing/extending to serve existing home by altering _____ft of ducting, N/A          Insulation (None, R-4.2, R-6, R-8, Other) for existing, altered and new ducting</p>	
<p><b>DHW</b> (new/altered/existing condition to be HERS verified)          Fuel type (natural gas, propane, standard heat pump, air-to-water heat pump, electric resistance)          System Type (tank with _____ gallons, tankless, combined hydronic)          Input:          Efficiency:          Recovery Efficiency:          Manufacturer and model # (if known)          Distribution (Standard, Parallel Piping, Point of Use, Recirc w/Pump Controls: Push Button / Motion sensor / None )</p>	<p><i>If new construction and gas heater installed, heat pump ready requirements will be required</i></p>

## APPLIANCES

<p><b>Cooktop</b> Fuel type (natural gas, propane, induction, electric resistance)</p>	<p><i>If new construction and gas cooktop installed, electric ready requirements will be required</i></p>
<p><b>Dryer</b> Fuel type (natural gas, propane, hear pump, electric resistance)</p>	<p><i>If new construction and gas dryer or gas hook ups installed, electric ready requirements will be required</i></p>

## Project Information Worksheet

Zone Information	Zone 1	Zone 2	Zone 3
Zone Type/Name:			
No. of Bedrooms:			
CFA (ft <sup>2</sup> ):			
Building level (story):			
Avg. ceiling ht (ft):			
Elev. Above grade (ft):			
Floor-to-floor ht (ft):			
Window head ht (ft):			

PV/Battery Information						
PV System: Y / N	Size (kWdc)	Azimuth	Tilt	Inverter Eff.	Solar Access %	CFI?
<i>If not PV, and part of a subdivision with 10 or more homes, solar ready will be required</i>						
PV System Notes:						
Battery Storage: Y / N	Capacity (kWh)	Control	Charging Eff.	Discharging Eff.	Self Utilization Credit?	
<i>If no battery installed of at least 5 KWH or higher, battery ready will be required</i>						
Battery Notes:						

Envelope Information by Zone						
<b>Zone 1:</b>	<b>Front</b>	<b>Left</b>	<b>Rear</b>	<b>Right</b>	<b>Int. Wall &gt;&gt;</b>	<b>Int. Wall &gt;&gt;</b>
Orientation (deg):						
Wall area (ft <sup>2</sup> ):						
Window area (ft <sup>2</sup> ):						
Roof/ceiling area (ft <sup>2</sup> ):		Pitch:		Skylight area (ft <sup>2</sup> ):		
Slab area (ft <sup>2</sup> ):		Perimeter (ft):				
Raised floor area (ft <sup>2</sup> ):		Crawlspace perimeter (ft):				

Envelope Information by Zone

Zone 2:	Front	Left	Rear	Right	Int. Wall >>	Int. Wall >>
Orientation (deg):						
Wall area (ft <sup>2</sup> ):						
Window area (ft <sup>2</sup> ):						
Door area (ft <sup>2</sup> ):						
Roof/ceiling area (ft <sup>2</sup> ):		Pitch:		Skylight area (ft <sup>2</sup> ):		
Slab area (ft <sup>2</sup> ):		Perimeter (ft):				
Raised floor area (ft <sup>2</sup> ):		Crawlspace perimeter (ft):				

Envelope Information by Zone

Zone 3:	Front	Left	Rear	Right	Int. Wall >>	Int. Wall >>
Orientation (deg):						
Wall area (ft <sup>2</sup> ):						
Window area (ft <sup>2</sup> ):						
Door area (ft <sup>2</sup> ):						
Roof/ceiling area (ft <sup>2</sup> ):		Pitch:		Skylight area (ft <sup>2</sup> ):		
Slab area (ft <sup>2</sup> ):		Perimeter (ft):				
Raised floor area (ft <sup>2</sup> ):		Crawlspace perimeter (ft):				

## Energy Features Summary: Climate Zone \_\_\_\_\_

		Design for Prescriptive Compliance CZ: _____ Circle: New or Altered	Alternative B-1 New: As Designed by Client Alteration: Proposed Improvement		Alternative B-2 (Different than B-1)		Alternative B-3 (Different than B-2)	
		Spec	Spec	Effect on Margin	Spec	Effect on Margin	Spec	Effect on Margin
<i>EXAMPLE: Roof insulation</i>		<i>Vented Attic Roof Steep Slope: (6:12) Tile</i> <ul style="list-style-type: none"> <li>● <i>R-30 Insulation ceiling</i></li> <li>● <i>Radiant Barrier</i></li> </ul>	<i>Vented Attic Roof Steep Slope: (6:12) Tile</i> <ul style="list-style-type: none"> <li>● <i>R-49 Insulation ceiling</i></li> <li>● <i>Radiant Barrier</i></li> </ul>	<i>S.E.E - 43.5</i> <i>P.E.E - 42.6</i> <b>+0.9</b>	<i>Vented Attic Roof Steep Slope: (6:12) Tile</i> <ul style="list-style-type: none"> <li>● <i>R-38 Insulation ceiling</i></li> <li>● <i>R-13 Insulation at the Roof Deck</i></li> </ul>	<i>S.E.E - 43.5</i> <i>P.E.E - 42.3</i> <b>+1.0</b>	<i>Unvented Attic Roof Steep Slope: (6:12) Tile</i> <ul style="list-style-type: none"> <li>● <i>R-0 Insulation ceiling</i></li> <li>● <i>R-42 CCSPF Insulation at the Roof Deck</i></li> </ul>	<i>S.E.E - 43.5</i> <i>P.E.E - 41.2</i> <b>+2.1</b>
Env	Roof insulation							
Env	Roofing material							
Env	Walls Exterior							
Env	HERS							
Env	Windows Efficiency							
Env	Windows Shading							
Mech	Heating:							
Mech	Cooling:							
Mech	IAQ							
Mech	Distribution							
Mech	DHW							
Mech	DHW Tank Location							
Mech	DHW Distribution							
Mech	HERS							
Battery	Flex Battery							
PV	PV System							

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Env	Roof insulation							
Env	Roofing material							
Env	Walls Exterior							
Env	HERS							
Env	Windows Efficiency							
Env	Windows Shading							
Mech	Heating:							
Mech	Cooling:							
Mech	IAQ							
Mech	Distribution							
Mech	DHW							
Mech	DHW Tank Location							
Mech	DHW Distribution							
Mech	HERS							
Battery	Flex Battery							
PV	PV System							



## Energy Features Summary: Climate Zone \_\_\_\_\_

		<b>Design for Prescriptive Compliance CZ: _____</b> <i>Circle: New or Altered</i>	<b>Alternative B-1</b> New: As Designed by Client Alteration: Proposed Improvement		<b>Alternative B-2</b> (Different than B-1)		<b>Alternative B-3</b> (Different than B-2)	
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Env	Roof insulation							
Env	Roofing material							
Env	Walls Exterior							
Env	HERS							
Env	Windows Efficiency							
Env	Windows Shading							
Mech	Heating:							
Mech	Cooling:							
Mech	IAQ							
Mech	Distribution							
Mech	DHW							
Mech	DHW Tank Location							
Mech	DHW Distribution							
Mech	HERS							
Battery	Flex Battery							
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