

Ground Source Heat Pump

Current Treatment in Energy
Compliance and the Pathway to
Improving GSHP in Title 24 Energy
Calculations

Topics to Cover

- Title 24 Residential Alternative Calculation Method Rule set for Calculating HVAC Performance
- Use of Section 10-109 (Compliance Option) to implement new rule sets
- Approach Options to Pursue
 - Performance rule set for Ground Source Heat Pumps
 - Advanced Installation Approval Guidelines

RACM RULE SET THAT DETERMINES EFFICIENCY

- Equation R3-39

- when

- $DBt < 82\text{ }^{\circ}\text{F}$

$$EERt = SEERnf$$

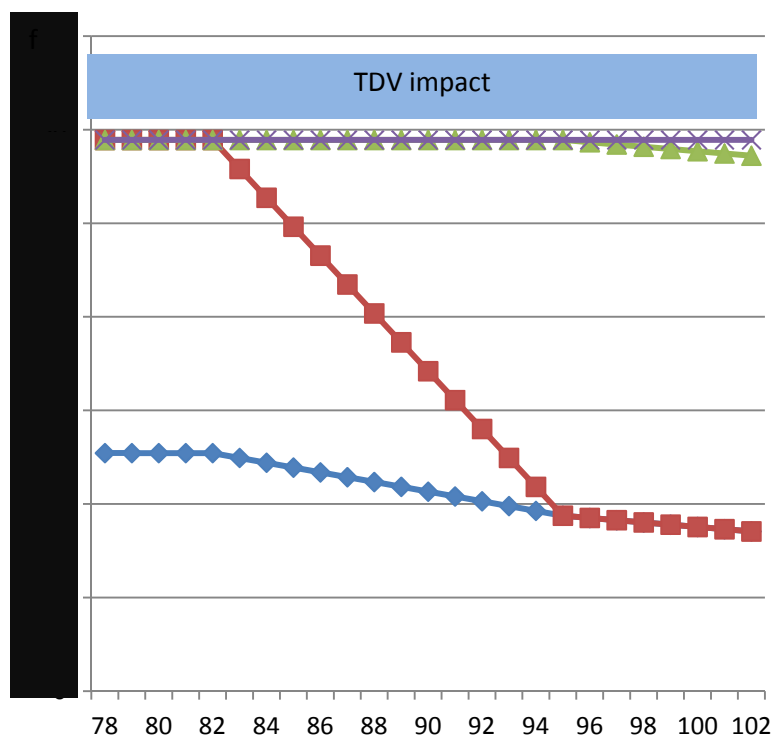
- $82 \leq DBt < 95$

$$EERt = SEERnf + ((DBt - 82) * (EERnf - SEERnf) / 13)$$

- $DBt \geq 95$

$$EERt = EERnf - (DBt - 95) * 0.12$$

Impacts of RACM Rules



ESTIMATED GROUND SOURCE WITH TDV IMPACT INCLUDED

ESTIMATED GROUND SOURCE WITH EER IMPACT INCLUDED

ESTIMATED GROUND SOURCE WITH CURRENT RULES

CURRENT BASELINE ASSUMPTION

Compliance Option

- Section 10-109 in the Building Energy Efficiency Regulations
- Used for introduction of new technologies or approval procedures
- Step
 - Supply CEC staff with technical background to review
 - Make determination with CEC staff on feasible pathway for compliance option

Compliance Option

- Formal Application for Compliance Option
 - \$2000 dollar application fee
 - Applicants Technical Report
 - CEC staff interaction
 - CEC staff report
 - Public Meeting
 - Approval by Full Commission

Approach Options or Levels

- First Step: Develop and Approve Installation Rule set so that ground source units can take EER credit
- Second Step: Implement new modeling rules that will allow full credit to ground source units.

Approach Option Level 1

- Design Engineers site verification
 - Would use existing rule set in computer modeling tools
 - Requires development of site inspection protocols
 - Gives final word on site acceptance to design engineer

Approach Option Level 2

- New modeling rules specific to Ground Source Heat pumps
 - Potentially more accurate modeling
 - Could include Domestic Hot Water
 - Much longer review time and extensive staff report required
 - Adds need for program to insert code and verify
 - Many more technical obstacles to validate
 - Would include site verification

Questions

