Rheem is the only company who can help a homeowner control 65% of their home’s energy usage.

Water Heating is The 2nd Highest Energy User In The House

Professional *Prestige*® ProTerra Hybrid Electric with LeakGuard™
What does building electrification look like?

Residential Gas Consumption by End Use in CA

- Water heater: 49%
- Space heating: 37%
- Stove: 7%
- Pools, spas, misc.: 4%
- Clothes dryer: 3%

Source: CA Residential Appliance Saturation Study 2010
The new degree of comfort.®

Rheem®
Sustainability
A Greater Degree of Good
At Rheem, we believe in going beyond the expected and striving for what’s possible. It’s how we’ve run our business and designed our air and water products for nearly 100 years—becoming a trusted leader for our customers and partners across the globe.

Early 1900 Ruud Water Heater
Rheem® is proud to continue paving the way for Hybrid Water Heaters by introducing the industry’s most efficient, advanced, and widest line of solutions available!

- **Smart**
- **Sustainable**
- **Savings**
The ProTerra Advantage

- LeakGuard Auto Shutoff
- LeakSense Leak Detection
- Integrated EcoNet WiFi
- Remote Control
- Compressor & Element Health Indicator
- Hot Water Availability
User Interface

- Current Mode
- Fault Indicator
- Current Set Point
- Mode Toggle
- Scald Warning
- Next Screen / Option
- Text Display
- Temp & Value Adjustment
- Current Alarm & History
- Scroll Available
- Enable / Disable
- Clear Alarm
- WiFi Setup & Indicator
- Enter / Select

- SAMPLE TEXT
- ON / OFF
- CLEAR ALARM
- WiFi
- ENTER
- VACATION
- ENERGY SAVER
- HIGH DEMAND
- HEAT PUMP
- MODE
- NEXT
- SAMPLE TEXT
- 120°F
- SCALD RISK
- Current Mode
- Fault Indicator
- Current Set Point
- Mode Toggle
- Scald Warning
- Next Screen / Option
- Text Display
- Temp & Value Adjustment
- Current Alarm & History
- Scroll Available
- Enable / Disable
- Clear Alarm
- WiFi Setup & Indicator
- Enter / Select

Rheem
EcoNet App Navigation

- **Scheduling**
- **Usage Reports**
- **Product Health**
- **Network Settings**
- **Alerts & Notifications**
- **Temperature Adjustment** *(Can be set as slide or arrows)*
- **Current Set Point**
- **Hot Water Availability**
- **Mode of Operation**
The scheduling feature allows users to program the water heater to their desired temperature each day (using up to 4 different time blocks). This scheduling feature helps to conserve energy by reducing the set point of the water.
Usage reports give the user ability to see amount of energy (kWH) used in weekly, monthly, or yearly readouts.
EcoNet App – Product Health

• Product health will display the element health and the compressor health.
The ProTerra Advantage

- Highest Efficiency
- Carbon Footprint Reduction
- Energy Usage Tracking
- Energy Star® Rated
The ProTerra Advantage – Carbon Footprint Reduction

What Does That Mean???

Standard Electric 50 gallon water heater has a total carbon emission of 3486 CO\textsubscript{2} lbs per year

202 trees needed to offset the carbon emissions*

Reduces carbon footprint with a 75% reduction in energy use

ProTerra 50 gallon hybrid water heater total carbon emissions: 846 CO\textsubscript{2} lbs per year

*(Std Electric total carbon emissions (3486) – Proterra 50 gallon carbon emissions (846) / CO2 stored from tree (13)) = trees needed

(3486 – 864)/13
Value Proposition With Solar

2.5 - 300w pv Panels

9.8 - 300w pv Panels
The ProTerra Advantage

SAVINGS

- Save Money & Energy
- Energy Saving Schedule
- Built-in Demand Response
- Vacation/Away Mode
Over 75% Reduction In Energy Usage

867 kWh per Year

3,531 kWh per Year
### Cost to Heat Water by Fuel

<table>
<thead>
<tr>
<th>Water Heater Type</th>
<th>Heat Pump</th>
<th>Tankless Gas</th>
<th>Tankless Electric</th>
<th>Tank Electric</th>
<th>Tank Gas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Efficiency</td>
<td>4</td>
<td>0.93</td>
<td>0.99</td>
<td>0.93</td>
<td>0.58</td>
</tr>
<tr>
<td>Annual Operational Cost</td>
<td>$145</td>
<td>$166</td>
<td>$585</td>
<td>$623</td>
<td>$267</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Electric Rate</th>
<th>$0.192 per kwh</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gas Rate</td>
<td>$1.500 per therm</td>
</tr>
<tr>
<td>Gallons Per Day</td>
<td>64</td>
</tr>
<tr>
<td>Desired Temperature</td>
<td>120</td>
</tr>
<tr>
<td>Incoming Ground Water</td>
<td>67</td>
</tr>
</tbody>
</table>

*64 gallons per day is National Avg.*
80gal HPWH vs Propane

Estimated Yearly Energy Cost
$149

First Hour Rating
(How much hot water you get in the first hour of use)
- very small
- low
- medium
- high

- Your cost will depend on your utility rates and use.
- Cost range based only on models fueled by electricity with a high first hour rating (greater than 75 gallons).
- Estimated energy cost based on a national average electricity cost of $0.12 per kWh.
- Estimated yearly energy use: 1240 kWh.

Estimated Yearly Energy Cost
$732

First Hour Rating
(How much hot water you get in the first hour of use)
- Very Small
- Low
- Medium
- High

- Your cost will depend on your utility rates and use.
- Cost range based only on models fueled by propane gas with a high first hour rating (Greater than 75 gallons).
- Estimated energy cost based on a national average propane gas cost of $2.41 per gallon.
- Estimated yearly energy use: 364 gallons.
Rheem Hybrid Heat Pump – How Does It Work?

• Air is pulled in and passes through a filter on the top of the water heater
• Heat in the air is absorbed by refrigerant inside the evaporative coil
• The refrigerant is pumped by a compressor that increases the temperature of the refrigerant on its way to the condenser
• The refrigerant travels through the condenser tubing that is coiled around the tank and transfers the heat to the water
• Cold air and condensation are expelled through this process
• All functions are controlled simultaneously by the Advanced control Panel and there are 5 operational modes
Sound Familiar?
Key Components

• The ONLY 40 gallon Hybrid Electric Water Heater on the market

• Ensure a replacement for any existing standard tank

• Zero clearance requirement for installation in tight spaces*

ALL NEW 40 GALLON MODEL!
Key Components

- All new re-designed display
- Easy to use controls for easy adjustment
- All new Test Mode for easy diagnostics
Key Components

- CTA 2045 Connector
- Allows utility company to access and control the water heater during peak usage times

*CTA connector only available on Proterra and Proterra with LeakGuard models
What Happen During a DR Event?

During a demand response event, the utility company is doing a load shift or reducing the electricity usage from the water heater by:

- Decreasing the water heater set point
- Changing the mode of operation
- Disabling the water heater
Demand Response Event

Integrated WiFi

OR

CTA 2045 Module

Utility

Demand Response
- Peak Shaving
- Energy Storage
- Grid Emergency

$/MWH

Time
Demand Response Event

Utility

Integrated WiFi

OR

CTA 2045 Module

Demand Response
- Peak Shaving
- Energy Storage
- Grid Emergency

Rheem

Heat Pump Water Heater

CAUTION HOT WATER. Contact may cause serious burns to skin

DR Event Active

120°
Demand Response Event

Integrated WiFi

OR

CTA 2045 Module
• JA13 scheduling allows for utilities to load a custom rate schedule via MyRheem portal. This custom rate schedule is then loaded into the water heater (wirelessly) at the time of installation. This data is then stored in the water heater until the unit is ready for use (new construction scenarios).
Modes Of Operation

**ENERGY SAVER** (default mode)
- A recovery using the heat pump and upper element. Primary recovery with Heat Pump (up to 1,700W equivalent) and element when needed (4,500W). In high output situations, heater is producing the equivalent of up to 6,200W

**HEAT PUMP**
- Delivers up to 1,700W to the water at standard ambient conditions
- Operating temperature of 37° - 145°

**HIGH DEMAND**
- Upper/lower element along w/heat pump simultaneously heats the water. Up to 6,200W of recovery. Elements in this mode activate quicker

**ELECTRIC**
- Either element is used to heat the water

**VACATION**
- Tank temperature will be maintained at 65° for 1-28 days or held indefinitely when “HOLD” feature is used
MODEL LINE UP / SPECS
What’s New With ProTerra

<table>
<thead>
<tr>
<th>HYBRID BUILDER</th>
<th>PROTERRA</th>
<th>PROTERRA W/LEAKGUARD</th>
</tr>
</thead>
<tbody>
<tr>
<td>• NEW! 40, 50, 65, 80 Gallon Capacities</td>
<td>In addition to the Builder model features, this model includes...</td>
<td>In addition to the Plus model features, this model includes...</td>
</tr>
<tr>
<td>• Remote Access (Integrated WiFi)</td>
<td>✓ Up to 4.00 UEF</td>
<td>✓ Auto Water Shut-off Valve (LeakGuard)</td>
</tr>
<tr>
<td>• Zero Clearance Requirement</td>
<td>✓ Demand Response Ready (CTA 2045)</td>
<td>✓ Integrated 360° Water Leak Detection (LeakSense)</td>
</tr>
<tr>
<td>• Widest Range of Ambient Temp</td>
<td>✓ Quietest (&lt;50 dBA)</td>
<td></td>
</tr>
<tr>
<td>• Less Than Two-year Payback</td>
<td>✓ Automatic Maintenance Alert</td>
<td></td>
</tr>
<tr>
<td>• Meets NEEA Tier 3</td>
<td>✓ $4,800 Energy Cost Savings</td>
<td></td>
</tr>
<tr>
<td>• Leak Detection Ready</td>
<td>✓ Leak Detection and Shutoff Valve Ready</td>
<td></td>
</tr>
<tr>
<td></td>
<td>✓ Meets NEEA Tier 4</td>
<td></td>
</tr>
</tbody>
</table>
LeakSense and LeakGuard Add-on

**Hybrid Builder Model**
Leak detection ready!

Easily upgrade the Builder model with LeakSense Kit

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Kit</th>
</tr>
</thead>
<tbody>
<tr>
<td>AP19134</td>
<td>Leak Sensor</td>
</tr>
</tbody>
</table>

**ProTerra Model**
Leak detection and shutoff valve ready!

Easily upgrade the Plus model with LeakSense / LeakGuard Kit

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Kit</th>
</tr>
</thead>
<tbody>
<tr>
<td>SP21111</td>
<td>Leak Sensor and Shutoff Valve</td>
</tr>
</tbody>
</table>
## Specifications

<table>
<thead>
<tr>
<th>Capacity</th>
<th>40 Gallon</th>
<th>50 Gallon</th>
<th>65 Gallon</th>
<th>80 Gallon</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>BREAKER SIZE</strong></td>
<td>30A</td>
<td>15A</td>
<td>30A</td>
<td>15A</td>
</tr>
<tr>
<td><strong>UEF</strong></td>
<td>3.75</td>
<td>3.45</td>
<td>3.75</td>
<td>3.75</td>
</tr>
<tr>
<td><strong>RECOVERY</strong></td>
<td>26</td>
<td>16</td>
<td>27</td>
<td>16</td>
</tr>
<tr>
<td><strong>FIRST HOUR DELIV</strong></td>
<td>60</td>
<td>46</td>
<td>67</td>
<td>54</td>
</tr>
<tr>
<td><strong>HEIGHT</strong></td>
<td>63”</td>
<td>62”</td>
<td>65”</td>
<td>75”</td>
</tr>
<tr>
<td><strong>DIAMETER</strong></td>
<td>20 1/4”</td>
<td>22 1/4”</td>
<td>24 1/4”</td>
<td>24 1/4”</td>
</tr>
<tr>
<td><strong>COMPRESSOR BTU</strong></td>
<td>4200</td>
<td>4200</td>
<td>4200</td>
<td>4200</td>
</tr>
<tr>
<td><strong>WEIGHT</strong></td>
<td>177 lbs</td>
<td>193 lbs</td>
<td>262 lbs</td>
<td>281 lbs</td>
</tr>
<tr>
<td><strong>VOLTAGE</strong></td>
<td>240V</td>
<td>240V</td>
<td>240V</td>
<td>240V</td>
</tr>
<tr>
<td><strong>UPPER ELEMENT</strong></td>
<td>4500w</td>
<td>2250W</td>
<td>4500W</td>
<td>2250W</td>
</tr>
<tr>
<td><strong>LOWER ELEMENT</strong></td>
<td>4500W</td>
<td>2250W</td>
<td>4500W</td>
<td>2250W</td>
</tr>
</tbody>
</table>
## Hybrid Builder Model Line Up

<table>
<thead>
<tr>
<th>Builder Models</th>
<th>Rheem®</th>
<th>Ruud®</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>PRO H40 T2 RH310BM</td>
<td>PRO H40 T2 RU310BM</td>
</tr>
<tr>
<td>30 Amp</td>
<td></td>
<td></td>
</tr>
<tr>
<td>40 Gallon</td>
<td></td>
<td></td>
</tr>
<tr>
<td>50 Gallon</td>
<td>PRO H50 T2 RH310BM</td>
<td>PRO H50 T2 RU310BM</td>
</tr>
<tr>
<td>65 Gallon</td>
<td>PRO H65 T2 RH310BM</td>
<td>PRO H65 T2 RU310BM</td>
</tr>
<tr>
<td>80 Gallon</td>
<td>PRO H80 T2 RH310BM</td>
<td>PRO H80 T2 RU310BM</td>
</tr>
</tbody>
</table>
Renewable Portfolio Standards Goal by State

RPS Policies Exist in 29 States and DC
Apply to 56% of Total U.S. Retail Electricity Sales

- WA: 15% by 2020
- MT: 15% by 2015
- MN: 26.5% by 2025
- WI: 10% by 2015
- NH: 25.2% by 2025
- VT: 75% by 2032
- NY: 70% by 2030
- PA: 18% by 2021
- OH: 8.5% by 2026
- NJ: 54.1% by 2031
- DE: 25% by 2026
- MD: 50% by 2030
- NC: 12.5% by 2021 (IOUs)
- HI: 100% by 2045
- OR: 50% by 2040 (large IOUs)
- CO: 30% by 2020 (IOUs)
- NV: 50% by 2030
- TX: 5,880 MW by 2015
- AZ: 15% by 2025
- NM: 80% by 2040 (IOUs)
- CA: 60% by 2030
- MI: 15% by 2021
- IA: 105 MW by 1999
- IL: 25% by 2026
- MO: 15% by 2021
- NY: 70% by 2030
- RI: 38.5% by 2035
- CT: 44% by 2030
- ME: 84% by 2030
- MA: 41.1% by 2030 +1%/yr

Source: Berkeley Lab (July 2019)
Notes: Target percentages represent the sum total of all RPS resource tiers, as applicable.
In addition to the RPS policies shown on this map, voluntary renewable energy goals exist in a number of U.S. states, and both mandatory RPS policies and voluntary goals exist among U.S. territories (American Samoa, Guam, Puerto Rico, US Virgin Islands).

RPS = Renewables Portfolio Standards
Policy Trends & CA’s Climate Goals

**CALIFORNIA’S CLEAN ENERGY AND CLIMATE GOALS**

<table>
<thead>
<tr>
<th>Renewable Target Date</th>
<th>2017</th>
<th>2020</th>
<th>2030</th>
<th>2045</th>
</tr>
</thead>
<tbody>
<tr>
<td>Renewable Target Goal</td>
<td>20%</td>
<td>33%</td>
<td>50%</td>
<td>100%</td>
</tr>
<tr>
<td>Date Legislation Passed</td>
<td>2002 (SB 1078)</td>
<td>2011 (SB 2 1X)</td>
<td>2015 (SB 350)</td>
<td></td>
</tr>
</tbody>
</table>

**SB100-CALIFORNIA MOVES TOWARD CARBON-FREE ECONOMY**

**28 YEARS BACK & 28 YEARS AHEAD**

- 1st Large Solar Farm Built in Marin County (1971)
- 1st HVCS Law Passed (1978)
- 20% EVs Delivered (2017)
- 33% PVs: Installed (2020)
- 43.9% EVs: Projected (2030)
- SB100 100% Clean, Low-Carbon Renewable Energy

RPS = Renewable Portfolio Standard
Heat Pump Utility Rebates

Rebate Buckets:
- Over $2000
- $1000 - $2000
- $500-$999
- $100 - $499
- $0-$99
Natural Gas Ban Watch List
California Electrification

Berkeley becomes first U.S. city to ban natural gas in new homes
By Sarah Rense Updated 7:23 pm PDT, Wednesday, July 17, 2019

SLO wants to be carbon-neutral 10 years faster than the rest of California
By Nick Wilson

San Jose becomes largest city requiring all-electric buildings, as local climate actions rise

Credit: City of San Jose
CA Title 24 Changes

CALIFORNIA’S 2019 RESIDENTIAL BUILDING ENERGY EFFICIENCY STANDARDS

The state’s energy efficiency standards for new buildings and appliances have saved consumers billions in lower electricity and natural gas bills. The 2019 Building Energy Efficiency Standards for residential buildings includes a first-in-the-nation requirement to install solar photovoltaic systems. Other features enable homes to reduce the electricity demand from the grid, helping to reduce energy bills and the carbon footprint.

SOLAR PHOTOVOLTAIC SYSTEM

Promote installing solar photovoltaic systems in newly constructed residential buildings. The systems include smart inverters with optional battery storage. This will increase the self-utilization of the electricity generated to power the home’s electricity loads including plug-in appliances. California is the first state in the nation to require smart systems on homes.

DEMAND RESPONSE COMPLIANCE OPTIONS

Encourage battery storage and heat pump water heaters that shift the energy use of the house from peak periods to off-peak periods. Utilities moving to time-of-use pricing assists the grid to meet the state’s climate change goals and helps homes reduce energy bills.

HEALTHY INDOOR AIR QUALITY

Enable using highly efficient filters that trap hazardous particulates from both outdoor air and cooking and improve kitchen ventilation systems. Moving air around and in and out of the home while filtering out allergens and other particles makes the home healthier.

BUILDING ENVELOPE

Strengthen insulation in attics, walls and windows to improve comfort and energy savings. Keeping the heat out during the summer and warm air during the winter makes a home more resilient to climate change.

$19,000 SAVINGS OVER A 30 YR. MORTGAGE

INITIAL COST $9,500
Energy Performance Guide

Estimated Monthly Energy Costs of a Resale Home: $243

Estimated Monthly Energy Costs of This KB Home: $123

Estimated Annual Savings: $1,440*

HERS INDEX
(HOME ENERGY RATING SYSTEM)

Figure represents estimated monthly costs of a typical similarly aged home. Actual energy consumption and costs will vary.

140 130 120 120 110 100 90 80 70 60 50 53 KB Home Score

Figure represents estimated monthly costs of an ENERGY STAR-certified KB home. Actual energy consumption and costs will vary.

Save More
Spend More
The Rheem Hybrid Wins:
• Highest Efficiency
• Quietest
• Zero Clearance
• Connectivity
• Leak Detection/Prevention
• Recovery
• 10 year Warranty