

DOCKETED

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Heat Pump Clothes Dryers and Emerging Technologies

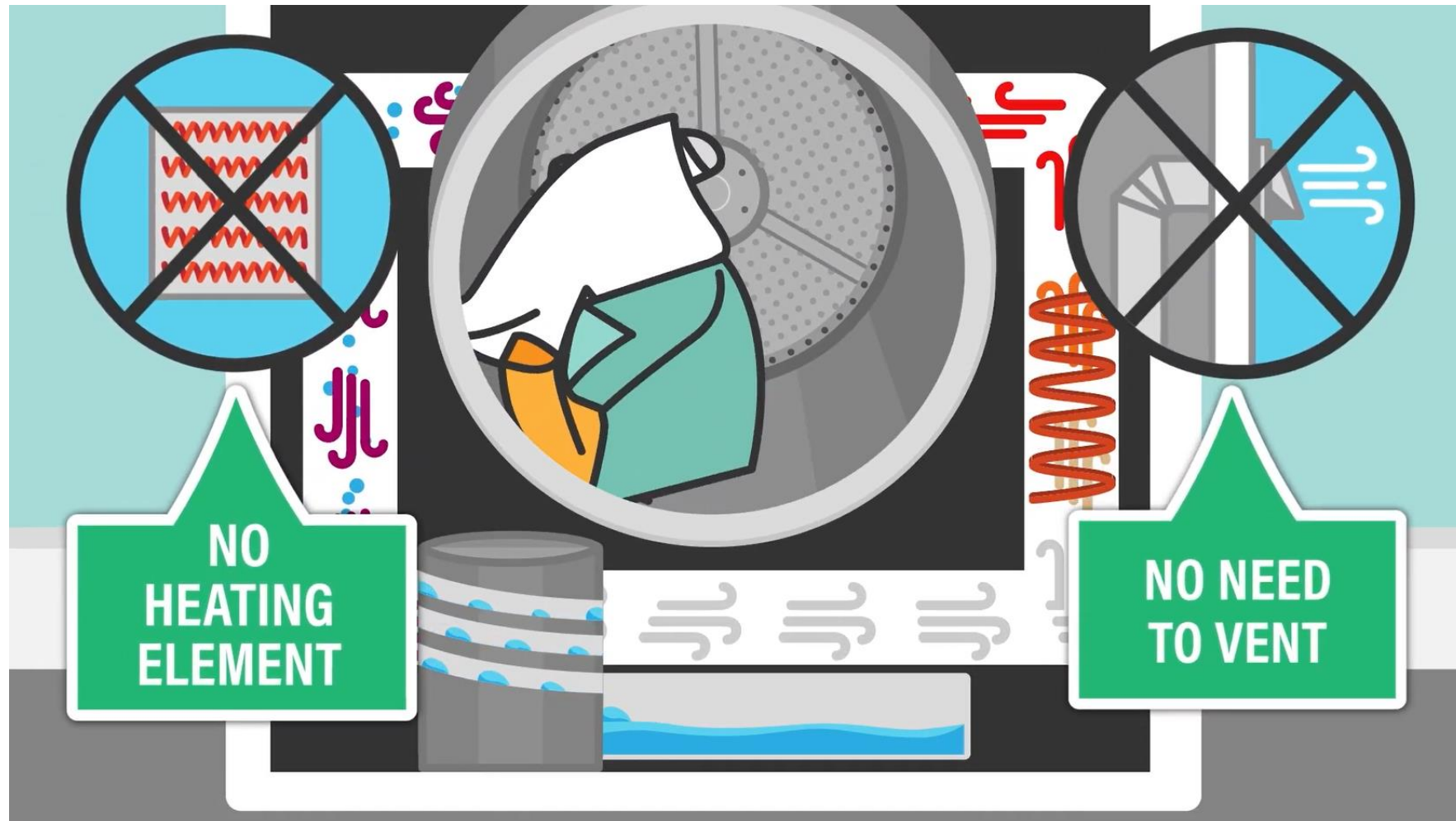
Dan Cronin

U.S. Environmental Protection Agency

CEC – Building Decarbonization and Energy Efficiency

June 22, 2021

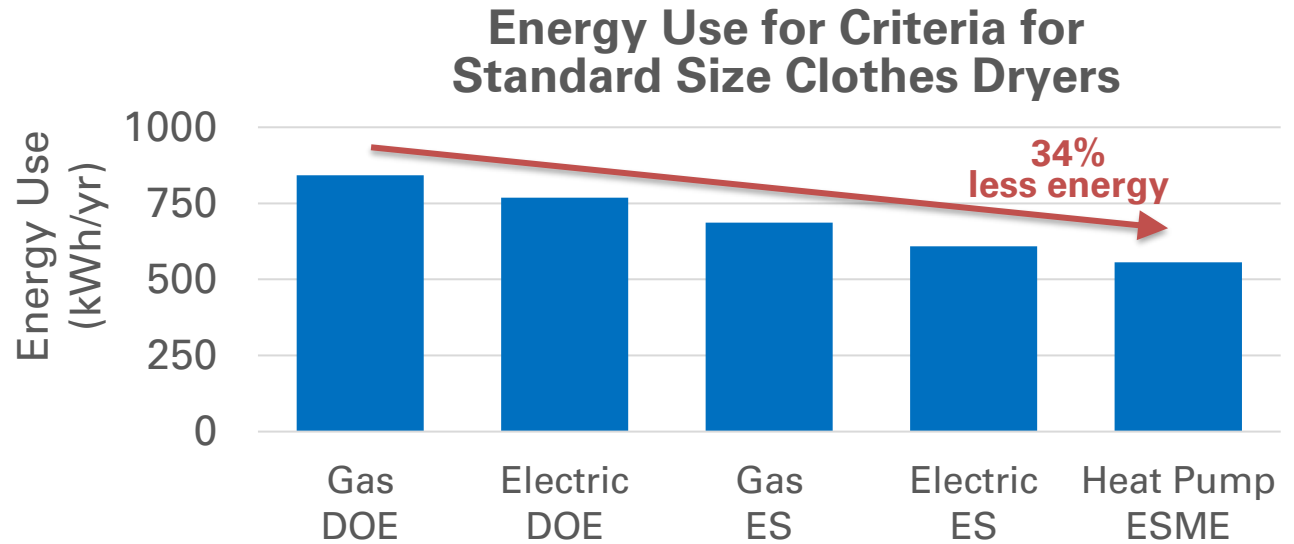
Heat Pump Clothes Dryers





Heat Pump Clothes Dryers

- ENERGY STAR Most Efficient (ESME) 2021 clothes dryers are models with efficiency only achievable with heat pump/hybrid heat pump technology
 - Currently 23 models from 8 brands



Product Class (Heat Pump or Hybrid Heat Pump)	Energy Savings Over Federal Standard	
	ESME 2021 Criteria	ESME 2021 Models
Standard Electric	28%	>50% of models save >40%
Compact 120V Ventless	30%	only product saves >50%
Compact 240V Ventless	43%	all products save >60%



Heat Pump Clothes Dryers

- Market
 - Currently <1% of households have heat pump dryer
- Consumer View
 - When first available in the US in 2012, consumers did not like the long cycle time
 - After many design improvements, cycle time is as low as 35 minutes in some models
 - No venting means consumers have more flexibility on where to put laundry in the home
- Incentives
 - Incentives are available from utilities for ~22% of households in the US
- Other emerging technologies in development
 - Ultrasonic dryer - GE
 - Thermoelectric heat pump dryer - Samsung



Induction

- An electromagnetic coil creates a magnetic field when supplied with an electric current. Compatible cookware, when brought into this field, is warmed internally and transfers the energy to what you are heating.
 - Similar technology to wireless charging

- Consumer View

- Gas cooking is currently king compared to conventional electric cooking
- The residential market for induction is low, but most manufacturers offer induction
- Utilities are starting to incentivize/promote residential induction in California, Arizona, New York and more



Boils 2x as fast as gas or conventional electric



Doesn't heat up without cookware on it—making it safer and easier to clean



No more guessing with precise, digital controls



Induction Cooktops & Ranges

Commercial

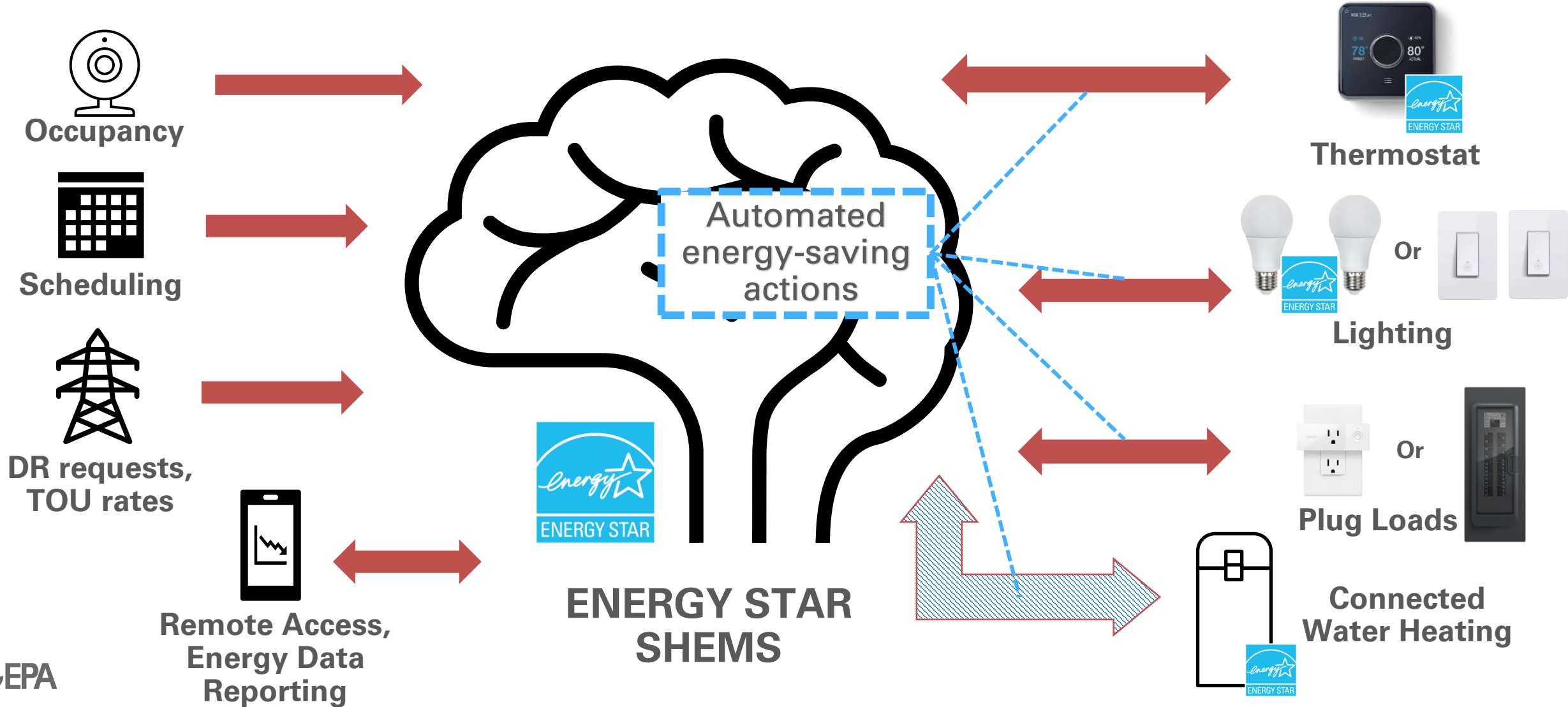
- Efficiency
 - Natural Gas: 25-40%
 - Electric Resistance: 60-70%
 - **Induction Electric: 80-90%+**
- ENERGY STAR specification including induction cooktops and ranges in development with expected effective date of May 2022

Residential

- Efficiency
 - Natural Gas: ~32%
 - Conventional Electric: ~75%
 - **Induction Electric: ~85%+**
- 2021 ENERGY STAR Emerging Technology Award for Residential Cooking Tops
 - Extended into 2022
 - First award announcement soon with more applications expected



ENERGY STAR SHEMS (Smart Home Energy Management System)





ENERGY STAR Emerging Technology Award 2022

- Please send technology nominations to emergingtech@energystar.gov before **July 27, 2021**
- For more information, please visit www.energystar.gov/emergingtech

Thank you!

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