



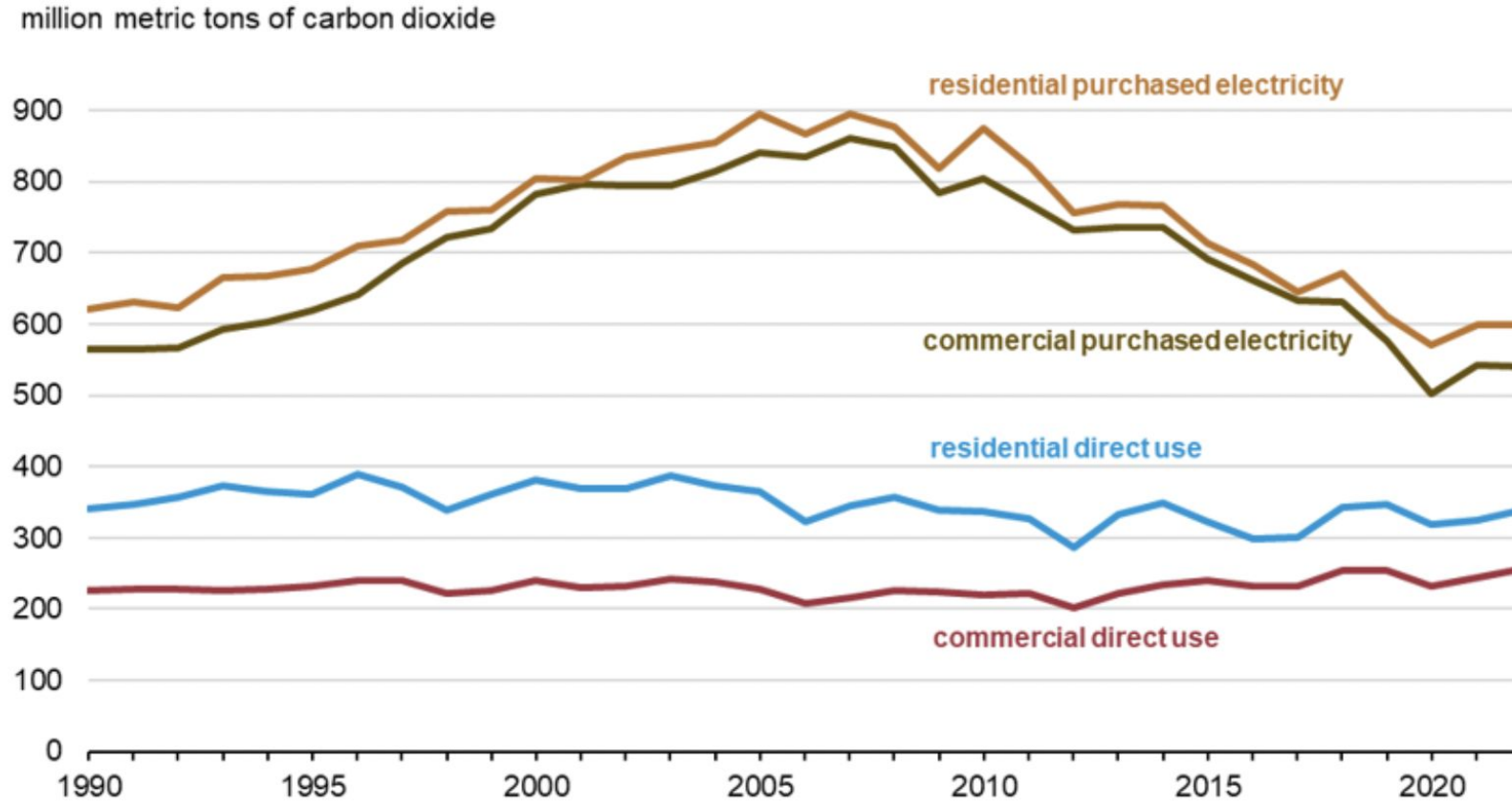
# Market Transformation

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Drivers & Challenges  
Dr. Véronique Bugnion, CEO

# Energy Efficiency is Hard

Figure 9. Energy-related CO<sub>2</sub> emissions from the residential and commercial sectors



eia Data source: U.S. Energy Information Administration, *Monthly Energy Review*, October 2023, Tables 11.2 and 11.3

- Direct use = on-site natural gas, heating oil, propane emissions
- Larger homes \* more efficient homes = flat direct use emissions
- All emissions gains in res/com sectors have been from the grid

# Challenges With Residential Homes Retrofits



## Cost of Retrofits

- For the vast majority of homeowners, efficient systems have to be financed
- Bill savings rarely cover loan + interest payment
- Incentives help reduce upfront financing costs but are not sufficient ... and complicated to navigate



## Existing Financing Options

- ✓ Short-term unsecured loans
- ✓ PACE financing
- ✓ On-bill financing
- ✓ PPAs
- ✓ Long-term loans
  - What we need: long-term, low-cost "vanilla" secured loans that wrap in or reward efficiency



# Commercial Building Challenges



## Old Mindset

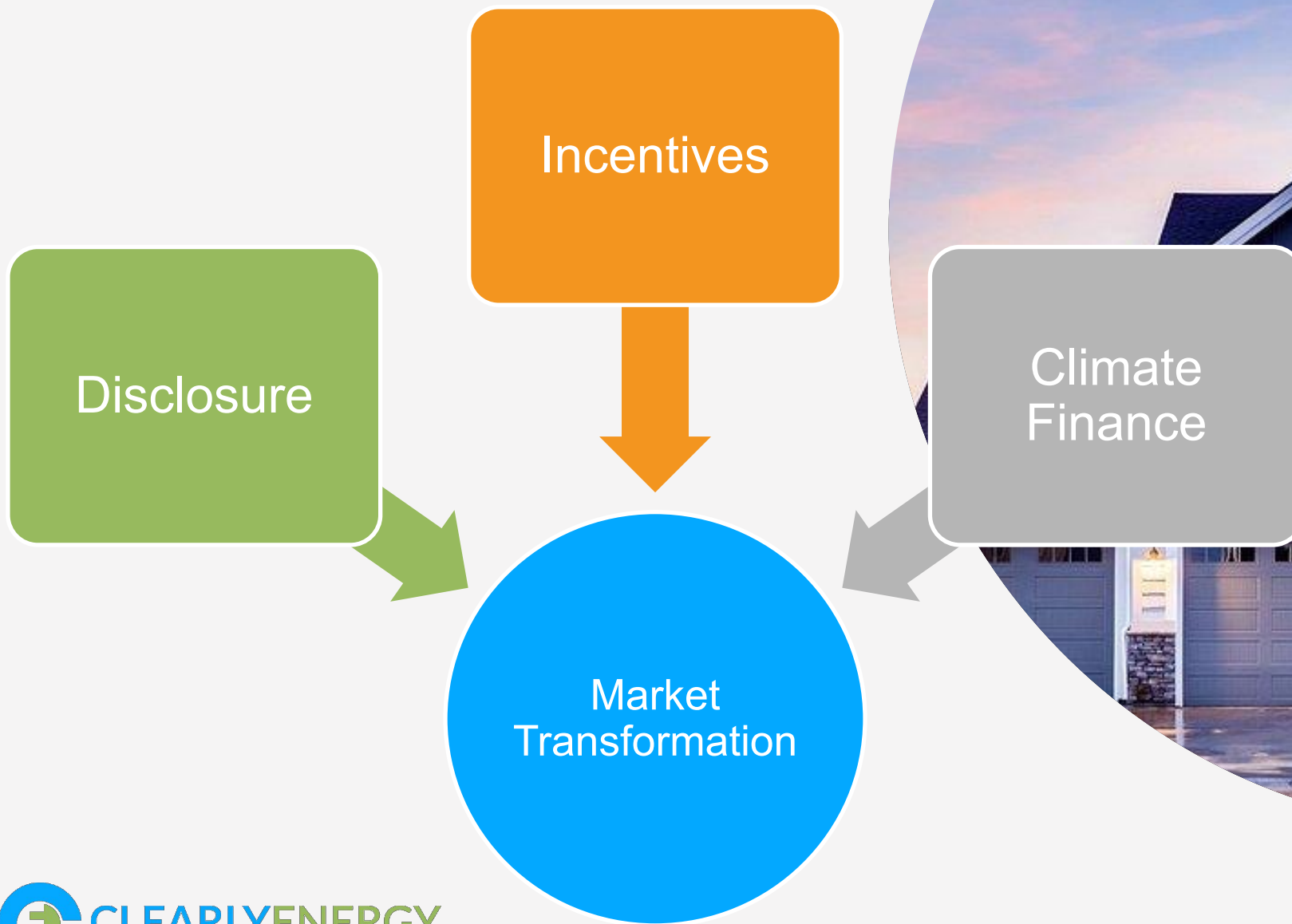
- Retrofits must provide return on investment
- Boston example: 100,000sq.ft multi-family residential building owner had 6% IRR threshold
- Building installed solar only
- Building now exposed to >\$1m penalties over next 20 years under Boston BERDO



## New Mindset

- Jurisdictional Building Performance Standards
- Self-imposed climate goals
- Boston example: factoring in BERDO creates incentive to install Heat Pump Water Heater, but not enough to for Heat Pump Space Heat
- Need new math & incentives!

# The Forces of Market Transformation



# Incentives

## Achievements



- IRA: residential rebates, tax incentives
- Greenhouse Gas Reduction Fund (GGRF) to help deploy clean energy technology and mobilize private capital

- Homeowner awareness
- Navigating incentives
- Stacking incentives



## Outstanding

# Disclosure

## Achievements



- SEC climate risk & emissions disclosure (GHG Scope 1 & 2) for all listed companies
- California SB 253 adds Scope 3 for all \$1bn+ companies doing business in CA
- PCAF principle: lenders “own” their share of emissions
- Commercial building benchmarking
- European Energy Performance Certificate

- Little residential disclosure, no US equivalent to EU EPC
- Residential ghg footprints can be modeled, ClearlyEnergy has done 92 million US homes
- Benchmarking to BPS can be a hard step



## Outstanding



# Who “Owns” Building Emissions

	Mortgage Debt Outstanding, Millions \$	Market value of real-estate, Millions of \$	Emissions from sector (million metric tons) (2022)	Emissions by sector or lender (million metric tons)
1-4 family residential	13,863,537	52,000,000	937	248
Multifamily residential and Non-farm commercial	5,820,082	20,700,000	797	223
Total				471
U.S -Chartered Depository Institutions	5,854,806			139
Government Sponsored Enterprises	7,400,770			178
Mortgage pools or trusts	3,711,605			89
Other	2,716,438			65





# Disclosure Example: LL97

## Decarbonization Compass

**Filter by**

Location Show

Building details Show

Carbon emissions Hide

LL97 compliance Hide

Building Emissions (MTCO<sub>2e</sub>)  
 21 149,985

EUI (kBtu/sqft) ?  
 7.0 276.0

Search by mortgage lender

Chase ×

JP MORGAN CHASE

PFSS HHH PURCHASER, LLC

### 350 W 38th Street, Manhattan

Owner  
LAI ENTERPRISES I, INC.

Mortgage Lender  
JP MORGAN CHASE

BBL  
1-00761-0062

Energy Grade Not Available	EUI 201.0
2024 LL97 Compliance Fail	2030 LL97 Compliance Fail
2024 LL97 Penalties \$24,884	2030 LL97 Penalties \$56,880

Current total emissions 388.1 MTCO<sub>2e</sub>

2024 Emissions Limit 295.3 MTCO<sub>2e</sub>

2030 Emissions Limit 87.1 MTCO<sub>2e</sub>

**Top on-site**

- Natural Gas
- Electricity U

# Climate Finance

## Achievements



- The stated climate ambitions of large financial institutions are significant
- Large European lenders include green mortgages in those ambitions
- One in six new European mortgages is a green mortgage, finance EPC A,B or finance building retrofits with rate discounts or cash back. 60+ green mortgage products in UK alone
- Small but successful US pilots (VT)

- US green mortgage market is non-existent: Every large lender has access to FannieMae and FreddieMac green mortgages. Of top 10 mortgage lenders and banks, only 1 mentions them.
- Specialized efficiency finance is great, but expensive



## Outstanding Issues

## Key Levers of Success

- Discount long-term rates on climate finance instruments by combining GSE incentives, lender commitments and GGRF/Green Bank rate buydowns
- Roll-in incentives
- Flexible borrowing, use green banks to de-risk products for lenders
- Have GSEs push products
- Leverage existing sales channels
- Simplify auditing and appraisal





# Key Points



## Key Selling Points

- ✓ Lenders: Larger loans
- ✓ Borrowers: Lower rates + energy savings + home comfort + flexible borrowing



## Key Sticking Points

- Lack of consumer awareness
- Longer transaction times
- Appraiser education
- Audits are expensive and lacks workforce

# Are the Stars Aligning for Market Transformation?

- Unprecedented incentive support
- Mortgage rates likely to drop leading to refinancing
- Financials have to internalize climate risk and portfolio emissions

## About ClearlyEnergy

ClearlyEnergy works at the nexus of public policy and software solutions using data-driven analytics and reporting to facilitate the energy transition.



### **ClearlyEnergy for Homes**

Home energy cost, consumption and greenhouse gas modeling, labeling, and finance



### **ClearlyEnergy for Buildings**

Data driven building analytics and reporting to facilitate the energy transition



### **ClearlyEnergy Targeted Assistance**

Targeted energy efficiency projects, software development, and policy implementation support



### **ClearlyEnergy for Climate Finance**

Help lenders measure the GHG footprint of loan portfolios, including residential mortgages, commercial building and auto loans





# THANK YOU

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