City of Ames

Climate Action Plan

City Steering Committee

April 18th, 2023
6:00 PM-8:00 PM

Meeting Agenda

Recap of GHG reduction target

Recap of Six Big Moves

Impact of IRA

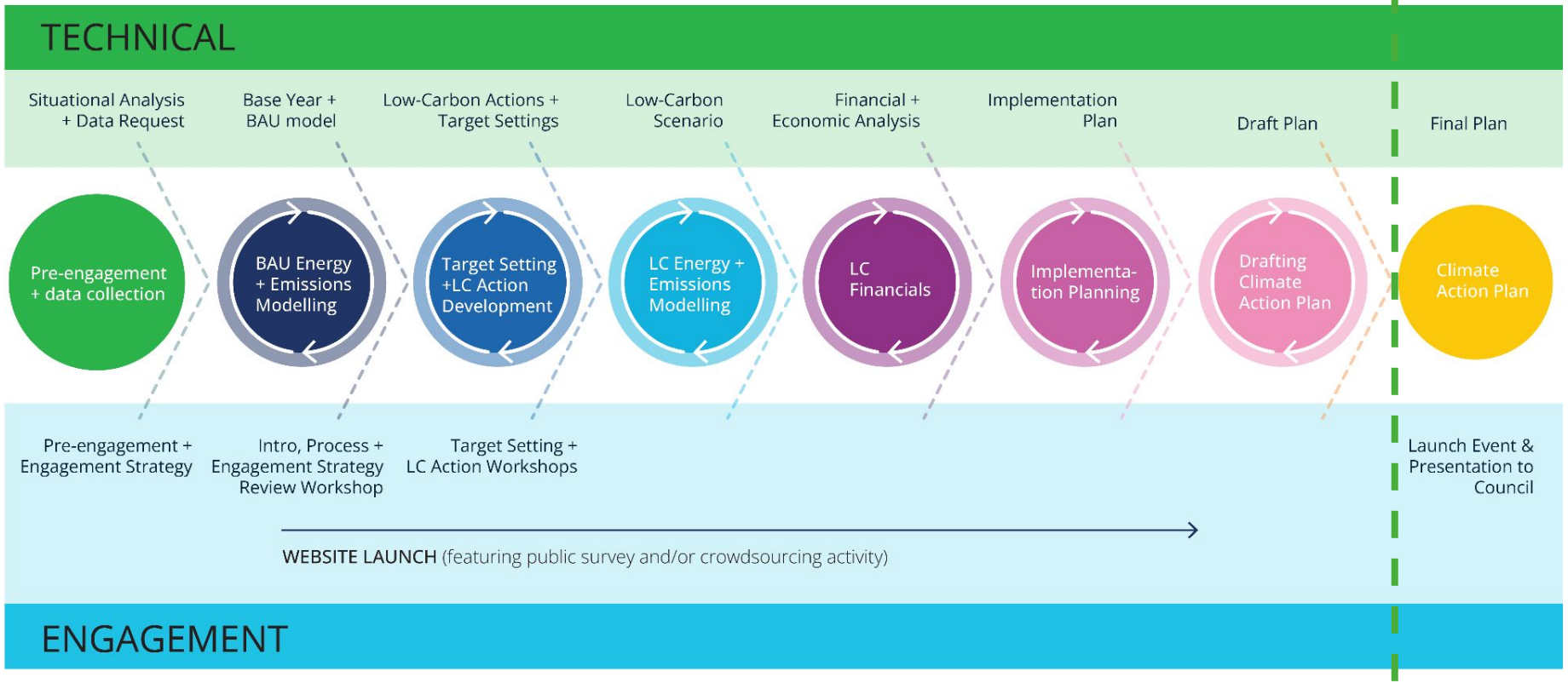
Action Financials

Implementation Strategy

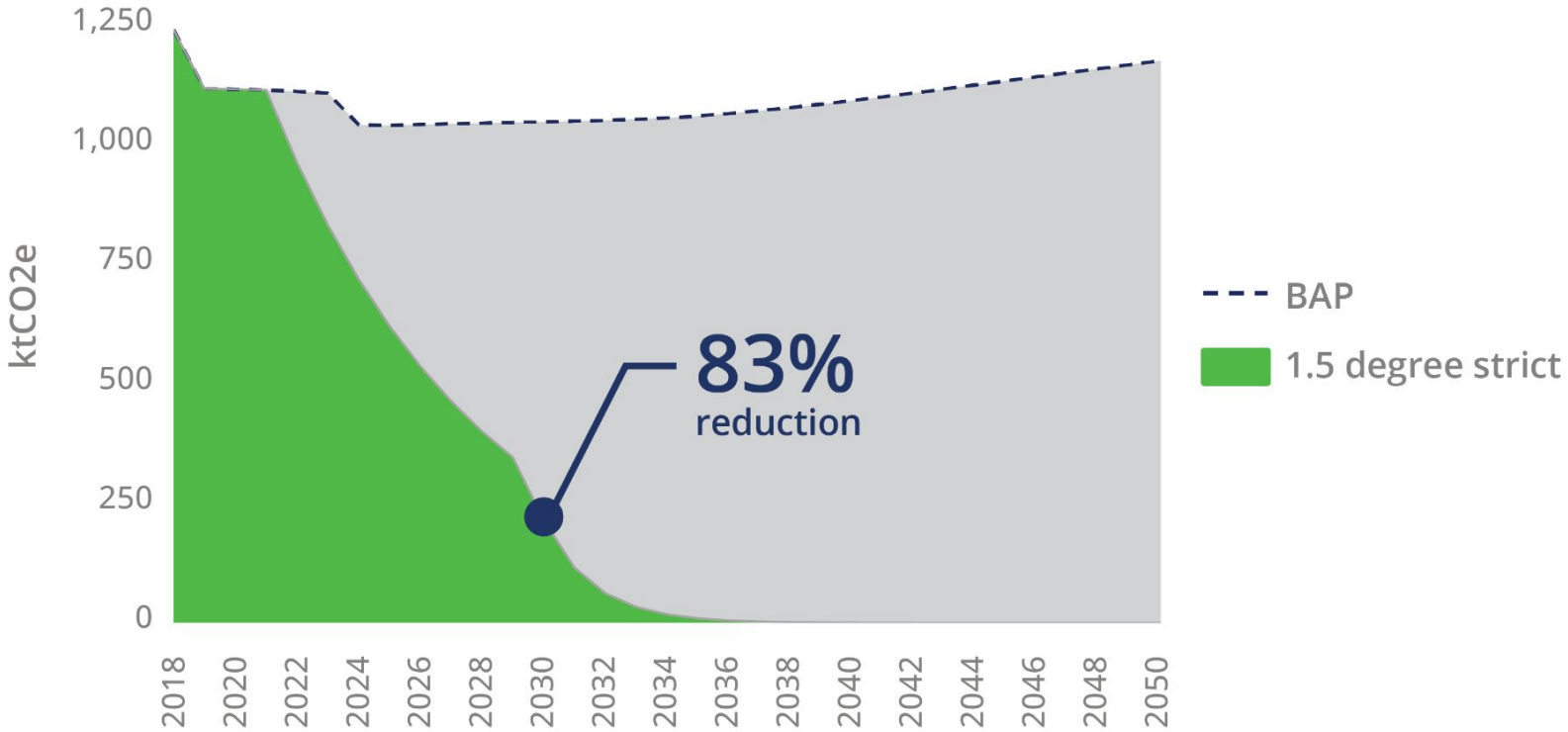
Questions & Discussion

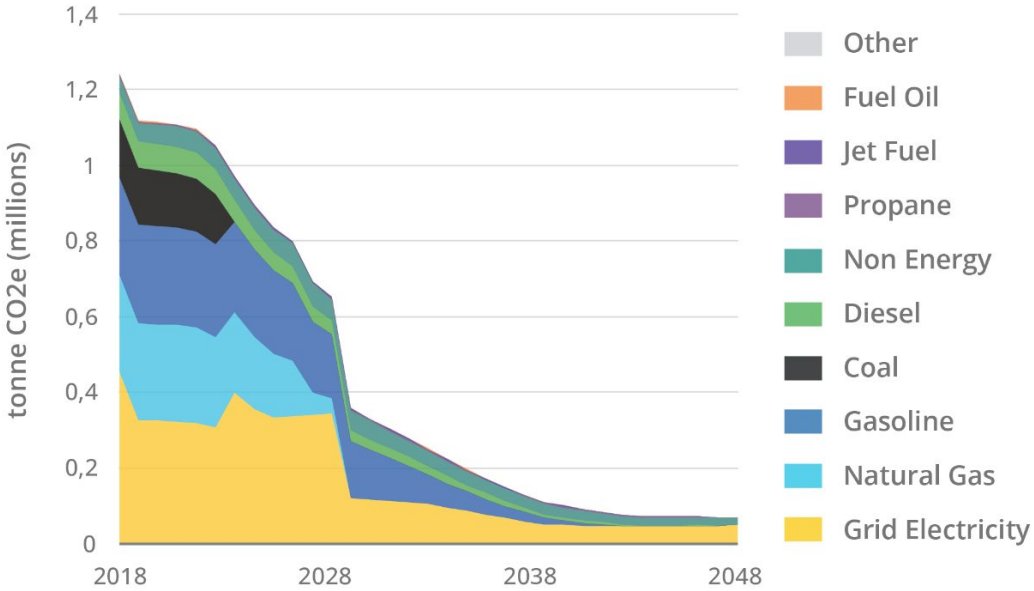
Project Overview

We are here!



A reminder of the low carbon pathway selected





Results

70% reduction by 2030

94% reduction by 2050

4.8 tonnes GHG emissions per capita by 2030

0.8 tonnes GHG emissions per capita by 2050

The 6 BIG MOVES

1. Renewable Energy Generation

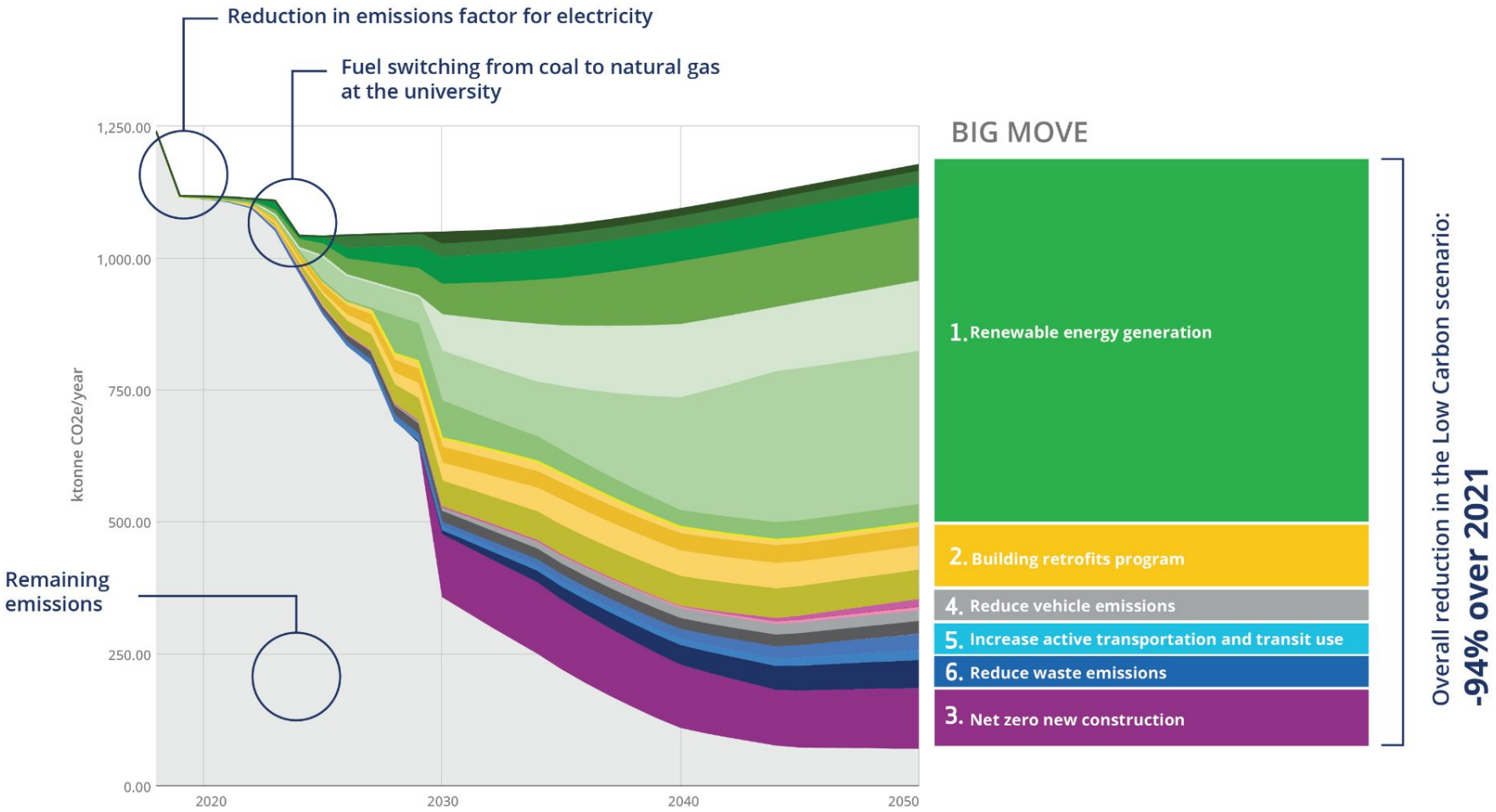
2. Building Retrofits Program

3. Net-Zero New Construction

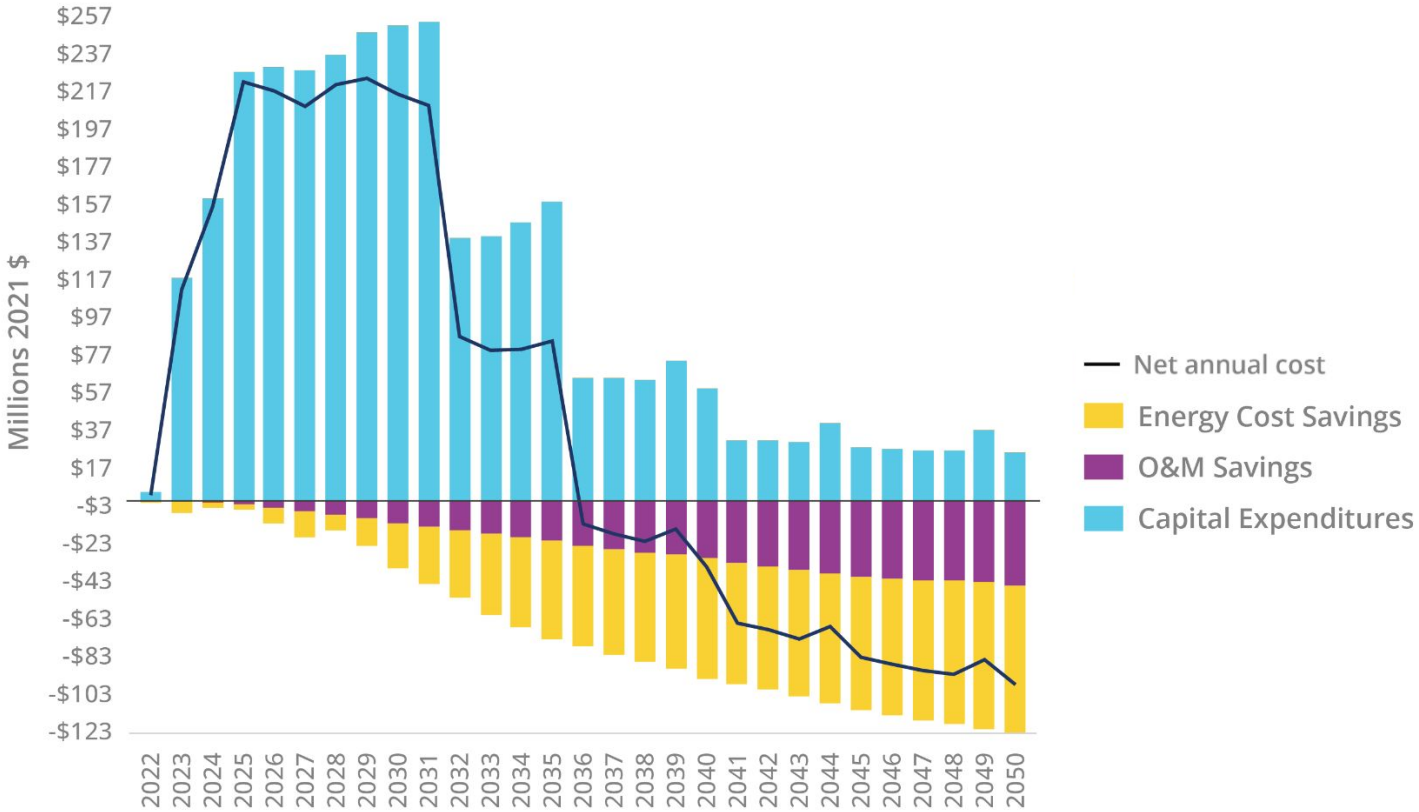
4. Reduce Vehicle Emissions

5. Increase Active Transportation and Transit Use

6. Reduce Waste Emissions


Reduction in emissions factor for electricity
Fuel switching from coal to natural gas at the university
Remaining emissions
ktonne CO2e/year
1,250.00
1,000.00
750.00
500.00
250.00
0.00
2020
2030
2040
2050
BIG MOVE
1. Renewable energy generation
2. Building retrofits program
4. Reduce vehicle emissions
5. Increase active transportation and transit use
6. Reduce waste emissions
3. Net zero new construction
Overall reduction in the Low Carbon scenario:
-94% over 2021

Year-over-year low-carbon scenario investments and returns, undiscounted.



Summary of financial results, undiscounted
(negative number = savings, positive number = cost) 2023–2050.

Financial Estimate	Low-Carbon Scenario (undiscounted)	Low-Carbon Scenario (3% discount rate)
Total incremental capital investment, 2023–2050	$3.2 billion	$2.4 billion
Total savings between 2023 and 2050 (energy cost savings and operations and maintenance savings)	$3 billion	$1.5 billion
IRA funding programs	$770 million	$600 million
Net cost, 2023–2050	-$570 million	$300 million
Capital cost (undiscounted) to reduce each metric ton of GHG[24]	$149	
Abatement cost (NPV) per metric ton of GHG		$14
Annual household savings on energy, 2050 over 2021	$1,950	
Average investment/person-year of employment	$43,000	

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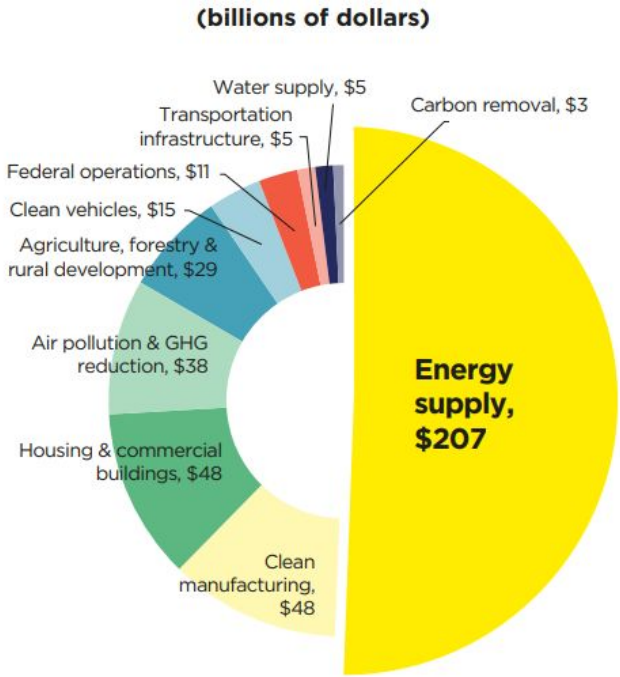
Impact of IRA

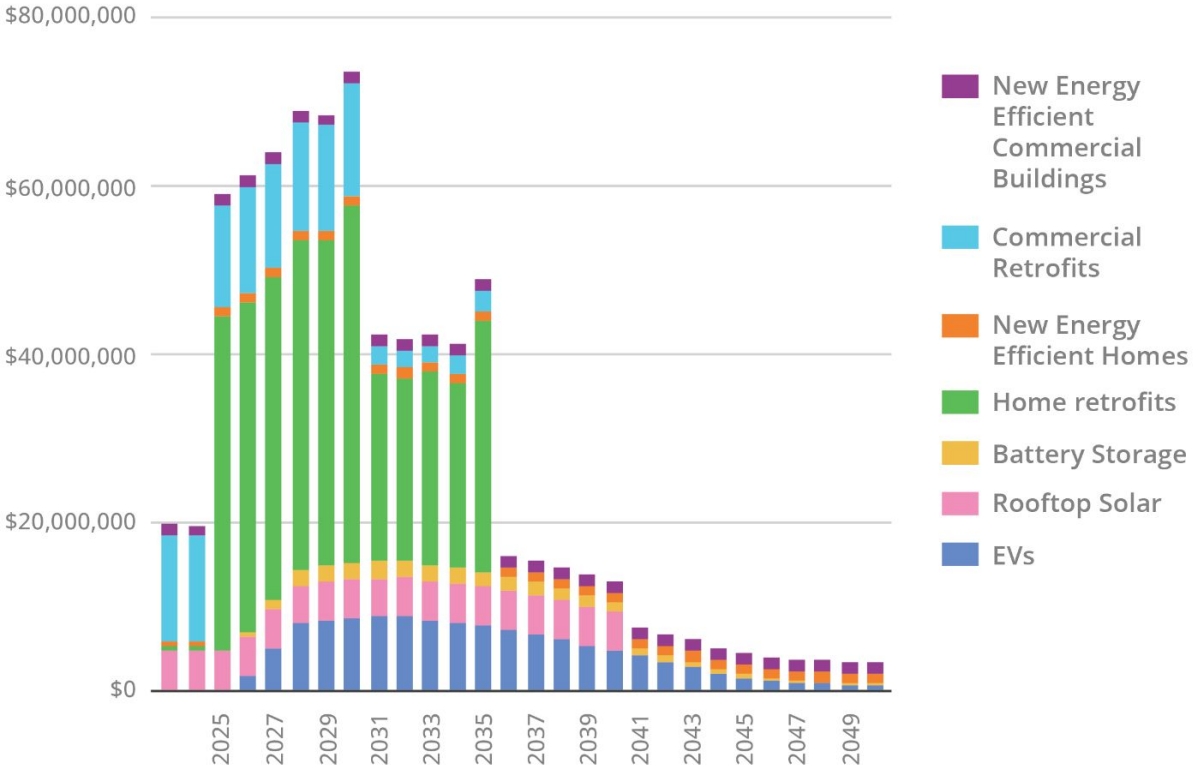
The **Inflation Reduction Act** makes the single largest investment in climate and energy in American history.

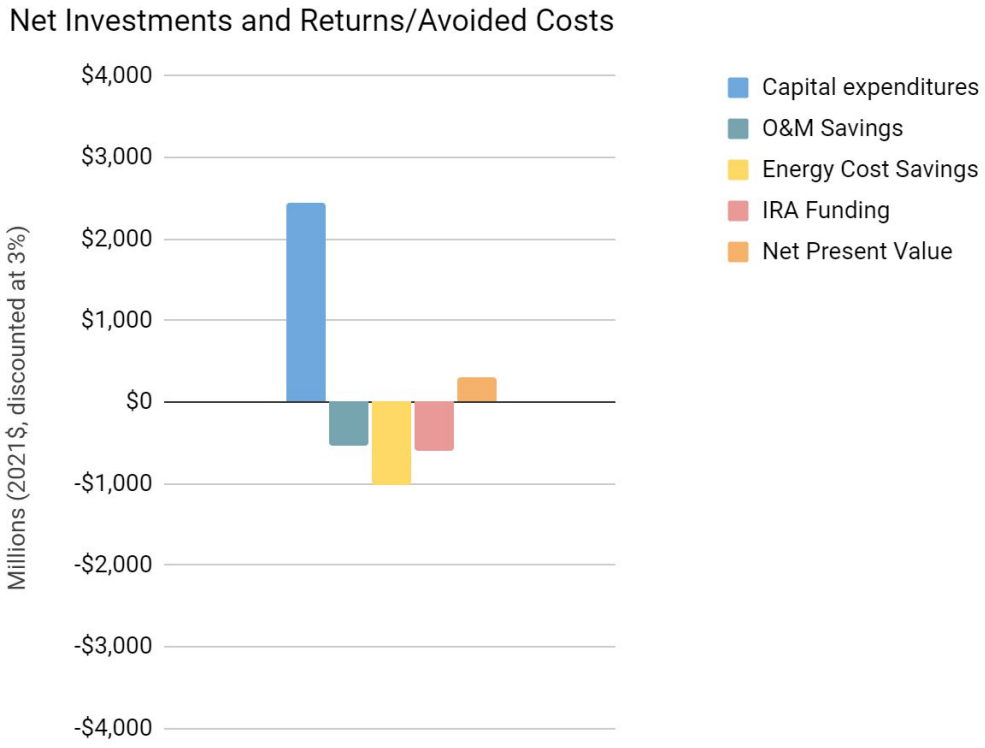


Source: C40

IRA savings by category

Cumulative funding potential of **$770 Million**





How much will it cost?

Adding IRA Funding

Net Cost of $300 million

Summary of financial results, undiscounted
Impact of IRA funding

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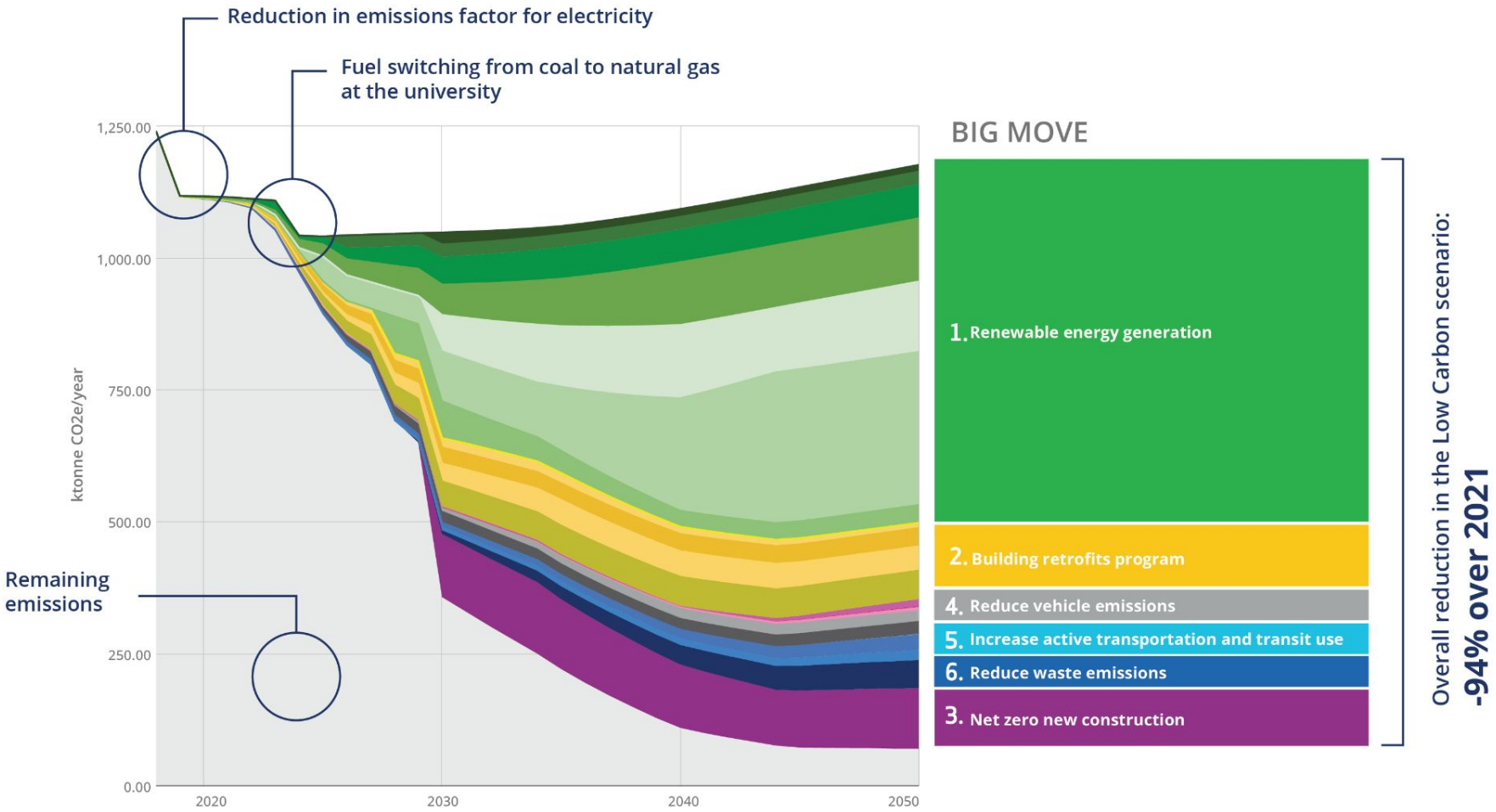
Action Financials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Overall reduction in the Low Carbon scenario:
-94% over 2021

Low-Carbon Action	Cumulative Emissions Reduction (kt CO2eq)	Proportion of Total Reduction	Net present value ($1000s)	Marginal Abatement Cost ($/t CO2 eq)
Renewable energy generation				
1.1 Renewable natural gas for district energy	330	2%	59,146	$179
1.3 Electric boilers for district energy	1,477	7%	-27,718	-$19
1.4 Solar PV on roofs	2,376	11%	-37,772	-$16
1.6 Large-scale renewable electricity generation	5,120	21%	796,060	$155
1.7 Renewable natural gas in buildings	969	5%	170,467	$176
Building retrofits program				
2.2 Retrofit of municipal buildings	302	1%	22,876	$76
2.3 High efficiency hot water in retrofit of homes	415	2%	-41,995	-$101
2.4 Enhanced industrial efficiency	811	4%	-52,249	-$64
2.5 Retrofits of homes	1,046	5%	587,979	$562

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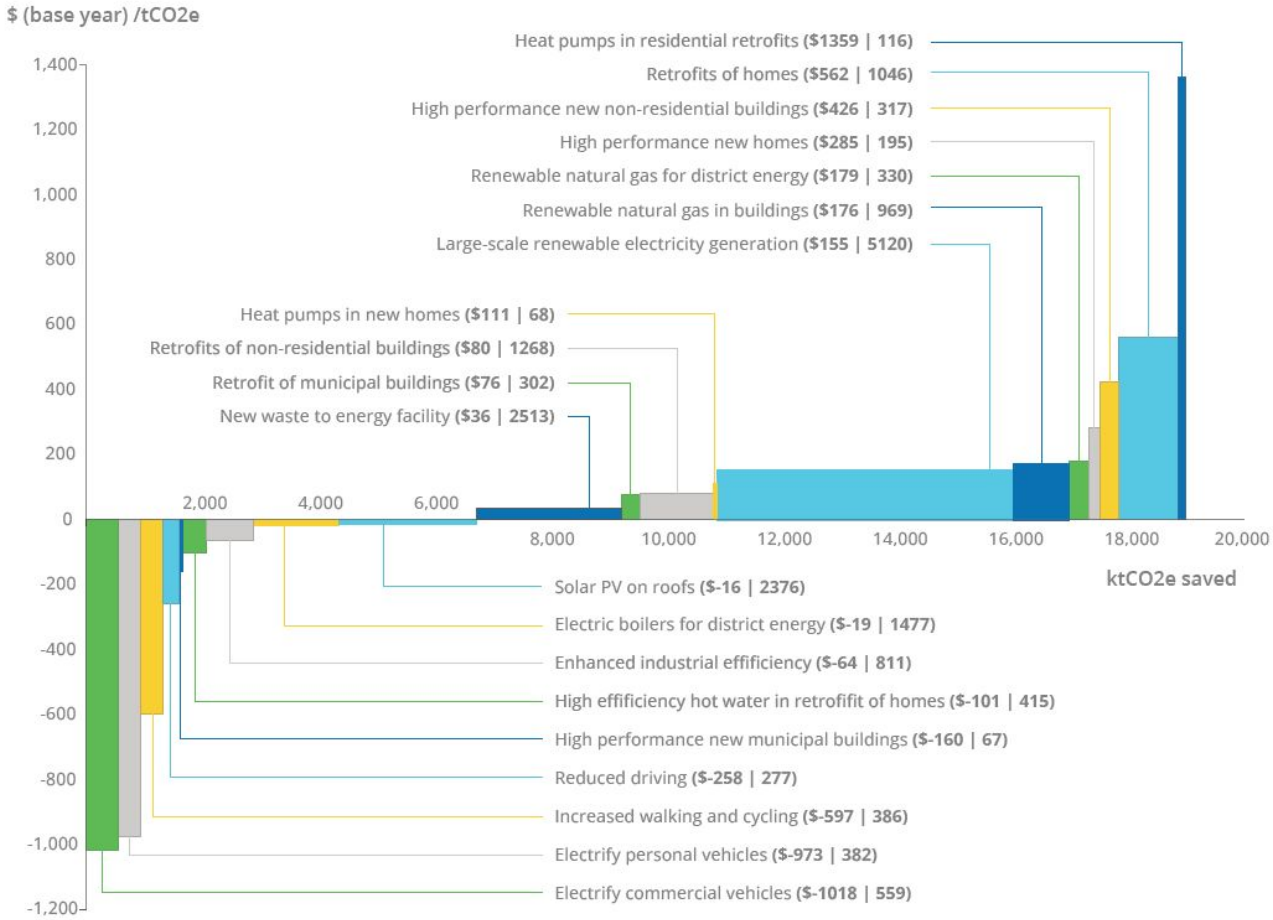


Figure 30. Marginal Abatement Cost curve.

Implementation Strategy

Low Carbon Actions

Community Wide

Physical change required to 2050

High-level strategic roadmap

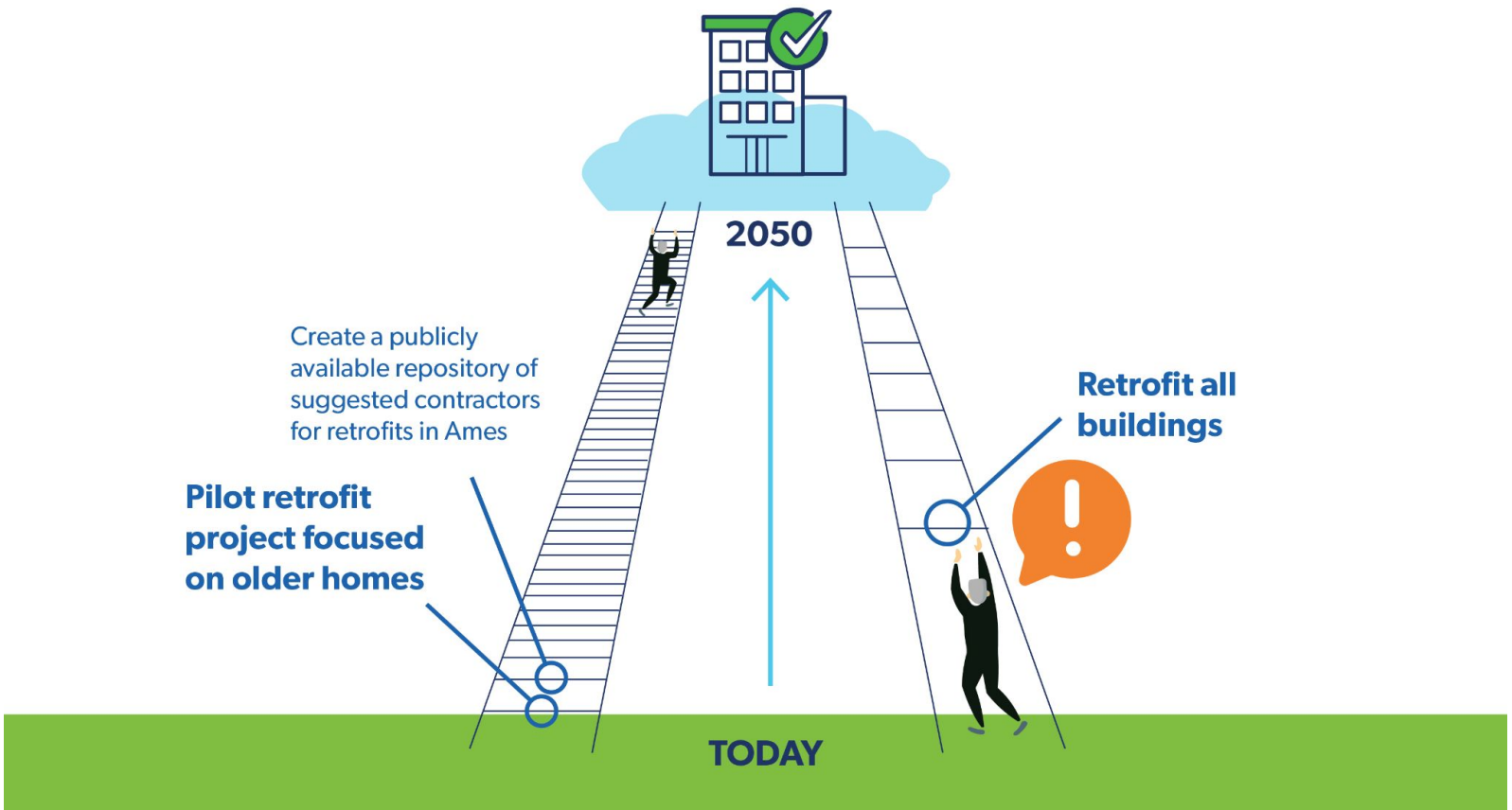
Implementation

City of Ames Specific

Start in the next 3 years

Specific initiatives supporting the roadmap

The importance of incremental progress



Building Retrofits Program

Emission Reductions: **3000 kt**

% of cumulative reductions: **15%**

Net Cost: **$930 million**

Implementation

Heat Pumps

- Loans and financial incentives
- Repository of vendors and installers
- Contractor training
- Resident feedback

Retrofits

- **Pilot retrofit program focusing on older homes**
- Partner with retrofit service companies
- **Retrofit Municipal Buildings** by 2030
- Energy use disclosure for large buildings
- Partner with a community loan provider

Building Retrofits Program

Neighborhood Finance Association

NFC – Cedar Rapids
An affiliate of Neighborhood Finance Corporation
www.neighborhoodfinance.org

ENERGY ADVANTAGE

- Currently Available in Des Moines and Cedar Rapids
- Loans for energy upgrades and home improvements
- $10,000 energy advantage 0% interest loan
- $10,000 to $15,000 forgivable loans for home improvements
- Ames could partner with NFA to offer loans for building upgrades

Building Retrofits Program

IRA funding for electrification

HEEHRA Rebate Levels

For Qualified Electrification Projects

Income Eligibility and % Costs Covered	
Low-income: <80% Area Median Income (AMI) % costs covered (including installation)	**100%**
Moderate-income: 80-150% AMI % costs covered (including installation)	**50%**
Overall Incentives	
Max consumer rebate	**$14,000**
Max contractor rebate	**$500**
Rebates for Qualified Electrification Projects	
Heat pump HVAC	**$8,000**
Heat pump water heater	**$1,750**
Electric stove/cooktop	**$840**
Heat pump clothes dryer	**$840**
Breaker box	**$4,000**
Electric wiring	**$2,500**
Weatherization insulation, air sealing, ventilation	**$1,600**

Source: Rewiring America

Renewable Energy Generation

Reductions: **10 000 kt (47%)**

Net Cost: **$850 million**

Implementation

Ground Mount Solar and Wind Generation

- **50 Megawatts by 2025 through power purchasing agreements (PPA)**
- Explore AMES owning its own generation
- Public education

Rooftop Solar

- Solar group buy program
- Incentives for solar ready new buildings
- Financial incentive to building owners who add rooftop solar to their existing buildings
- Partner with a non-profit loan provider (NFA)

Renewable Energy Generation

Solar Group Buy, MREA

Since 2013, the MREA has facilitated over 50 Solar Group Buy programs around the Midwest, educating over 11,600 individuals with our Solar Power Hour information sessions, and leading to more than 17,000 kW on over 2,660 properties.

- Education
- Financial Incentive
- Trusted process
- Ames could partner with MREA

Source : Group Buy Solar Installations, Midwest Renewable Energy Association

Net-Zero
New Construction

Emission Reductions: **580kt (3%)**

Net Cost: **$180 million**

Implementation

- **Zoning code requirements and tax incentives for new NZ buildings**
- All new municipal buildings starting in 2025
- Builder training in net zero and passive house design principles
- Energy use disclosure for large new buildings

Reduce
Vehicle Emissions

Emission Reductions: **930kt (4%)**

Net Saving: **$960 million**

Implementation

- Education about IRA Clean Vehicle credit (30D), $7,500 credit for new and a $4,000 credit for used
- EV infrastructure policies/by-laws for new MURBs, commercial buildings & parking lots
- **Municipal policy for new vehicle purchases**
- Support CyRide with their their decarbonization plan. Collaborate on applying for funding opportunities.

Increase Active Transportation and Transit Use

Emission Reductions: **660 kt (3%)**

Net Saving: **$660 million**

Implementation

- Work with ISU to introduce a bikeshare program
- Improve and expand active transportation infrastructure
- CyRide bus pass partnerships with large employers
- Increase transit frequency in downtown core and from key neighbourhoods to ISU
- Car free zones downtown and near ISU

Reduce
Waste Emissions

Emission Reductions: **730 kt (3%)**

Implementation

- **Implement an organized garbage collection system**
- Education to residents on composting and waste reduction
- **Implement an alternative waste to energy system which allows for refuse to be combusted in a separate boiler**

Questions & Discussion