

Building decarbonization in multi-unit projects

WITH SPECIAL GUEST DYLAN MARTELLO,
SENIOR BUILDING SYSTEMS CONSULTANT
AT STEVEN WINTER ASSOCIATES, NEW YORK

Strict new rules are being phased in for carbon in new and existing buildings in Canada and USA municipalities. Our guest presenter, a building systems consultant for the 709-unit Sendero Verde affordable housing project in Harlem will provide details on a designed that features a building envelopes at least five times tighter and better insulated than typical structures, heated and cooled by heat pumps.

Dylan will talk about Sendero Verde and the recent regulatory changes in New York City, New York State and Massachusetts.

Host Bruce Nagy will discuss how municipalities are approaching decarbonization and cover multi-unit projects in Canada and beyond.



WED APR 12 | 1:00 PM EASTERN



**Clean Air
Partnership**

CLIMATE SOLUTIONS WEBINAR SERIES



CAP CLIMATE SOLUTIONS WEBINAR SERIES

WITH HOST BRUCE (BF) NAGY



Latest news on batteries, renewables and micro-grids in cities - May date TBA

Cities are meeting decarbonization goals by supporting and using renewables and batteries.

What are the success stories and future trends in a rapidly changing area.



Contemporary public space & transportation trends- Sept date TBA

Cities are meeting decarbonization and public health goals through master plans, infrastructure and rules that welcome alternate vehicles, cycling, pedestrians, reduced car dominance and parking, more green spaces, trails and recreation facilities.



Climate and energy policy developments in Europe & UK

Nov date TBA - Guest: Prof Peter Strachan, Scotland.



CLIMATE SOLUTIONS WEBINAR SERIES



TODAY

BRUCE NAGY - ABOUT 25 MINS

◇ CLIMATE SCIENCE UPDATE

◇ DEVELOPMENTS IN CLIMATE GEOPOLITICS

◇ BUILDINGS IN MUNICIPALITIES - CITY STRATEGIES & CASE EXAMPLES

DYLAN MARTELLO - ABOUT 25 MINS

◇ PRINCIPLES OF LOW CARBON MULTI-FAMILY DESIGN

◇ CASE STUDY: SENDERO VERDE (EAST HARLEM, NY)

◇ BUILDING DECARBONIZATION IN NEW CODES:

-MASSACHUSETTS

-NEW YORK



TODAY'S GUEST PRESENTER
DYLAN MARTELLO



DYLAN MARTELLO IS A SENIOR BUILDING SYSTEMS CONSULTANT FOCUSING PRIMARILY ON ADVANCED ENERGY MODELLING, PASSIVE HOUSE DESIGN CONSULTING, AND BUILDING PERFORMANCE ANALYSIS.

HIS EXPERTISE WAS PROVIDED FOR THE SENDERO VERDE AFFORDABLE HOUSING PROJECT IN HARLEM, NEW YORK, A 709 UNIT PASSIVE HOUSE STRUCTURE.

DYLAN BRINGS A KEEN UNDERSTANDING OF THE ECONOMIC, SOCIAL, AND ENVIRONMENTAL IMPLICATIONS THAT COME WITH ENERGY EFFICIENCY MEASURES IN ADVANCED BUILDING DESIGN.

HE ALSO SERVES AS AN INTEGRAL PART OF THE *BUILDINGS AND BEYOND* PODCAST PRODUCTION TEAM.

Thank you to DYLAN MARTELLO

and also to Gaby Kalapos & webinar manager Desislava Stefanova from the Clean Air Partnership.

BRUCE (BF) NAGY

CLIMATE SOLUTIONS

- ◇ COLUMNIST, SPEAKER, CONSULTANT
- ◇ AUTHOR 250+ ARTICLES ON CLIMATE SOLUTIONS
- ◇ AUTHOR OF *THE CLEAN ENERGY AGE*, ROWMAN & LITTLEFIELD



PLEASE SEE MY FEATURE FROM FEB IN
CORPORATE KNIGHTS MAGAZINE ON
NORTH AMERICAN GREEN BUILDINGS AT SCALE
[HTTPS://TINYURL.COM/HHZP9967](https://tinyurl.com/HHZP9967)

SOLUTIONS, PRIORITIES, CASE EXAMPLES



BUILDINGS
NEW & RETROFIT TECHNOLOGY & PROGRAMS



TRANSPORTATION
ELECTRIC FLEETS, INFRASTRUCTURE & TRANSIT VEHICLES



POWER & STORAGE
TECHNOLOGY, PLANNING & ECONOMICS



CLIMATE SCIENCE UPDATE

CLIMATE SCIENTISTS ARE PANICKING

WE'RE BREAKING ALL THE RECORDS THAT WE DON'T WANT TO BREAK.

- BOTH POLES AND GREENLAND ARE MELTING AT RECORD RATES.
- UNPRECEDENTED OCEAN SURFACE TEMPERATURES.
- ANOMALIES WITH OCEAN CURRENTS LIKE THE GULF STREAM.
- SPIKES IN THE INCIDENCE OF HEAT WAVES, DROUGHTS, WILDFIRES, FLOODS AND MUDSLIDES THAT ARE KILLING THOUSANDS.
- MANY PLACES UNINSURABLE OR INSURABLE AT IMPOSSIBLY HIGH COST.

Why scientists are using the word scary over the climate crisis

The former BBC environment analyst Roger Harrabin has spent his career talking to scientists. Now they're telling him they're scared of what they're seeing

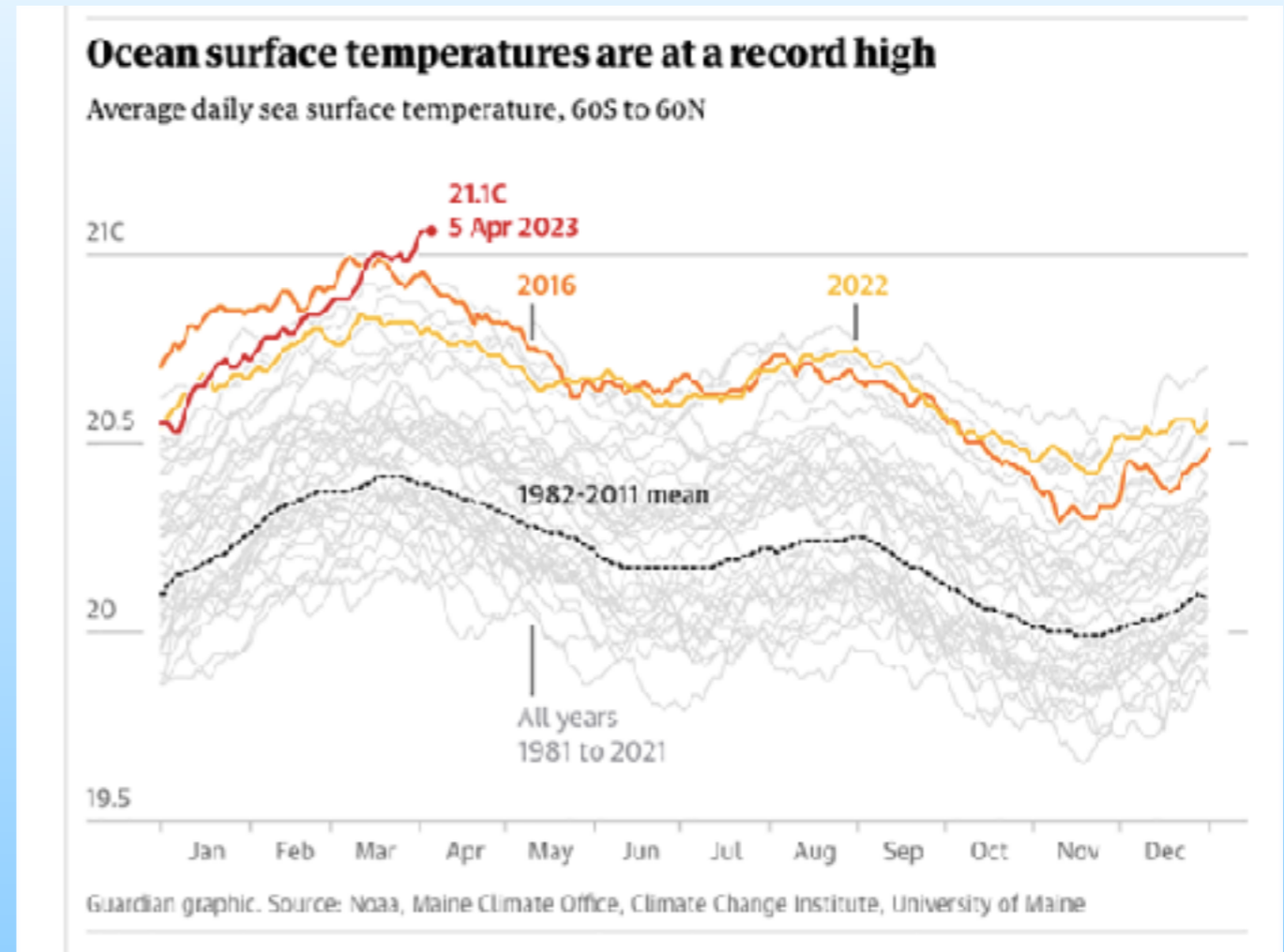


Smoke engulfs volunteers during a forest wildfire near Kyuyorelyakh village, west of Yakutsk, eastern Siberia, in August 2021. Photograph: Ivan Niki forov/AP

Back in the 1980s, when climate research began to really take off, scientists were desperate to retain their credibility as they unravelled the potentially dire consequences of the “new”

CLIMATE SCIENCE UPDATE

- MILLIONS ARE ALREADY DYING FROM AIR POLLUTION WITHIN A FEW SHORT YEARS THE THOUSANDS DYING FROM EXTREME WEATHER COULD BECOME MILLIONS.
- GLOBAL ECONOMY WILL BE SEVERELY DISRUPTED, WIDESPREAD FOOD AND WATER SHORTAGES AND INCREASING VIOLENCE BETWEEN HUMANS.
- EVEN CONSERVATIVE MAINSTREAM MEDIA IS NOW RUNNING CLIMATE CHANGE AS THE LEAD STORY.



SCIENTISTS KEEP ADDING, HOPEFULLY, THAT THERE IS STILL TIME TO STOP THE DAMAGE AND PUSH BEYOND POINTS OF NO RETURN, BUT THE WINDOW IS DEFINITELY CLOSING. WE ALL HAVE A ROLE TO PLAY, INCLUDING THE PEOPLE ON THIS WEBINAR WHO ARE MOSTLY ACTION PEOPLE WORKING IN CITIES. IT HAS NEVER BEEN MORE IMPORTANT THAN IT IS TODAY TO ACT WITHOUT HESITATION, AND MORE QUICKLY DO THE THINGS WE KNOW MUST BE DONE.

ARE CITIES TAKING ACTION?

YES THEY ARE, ALTHOUGH LOCAL GOVERNMENT CAN BE SLOW RELATIVE TO THE RAMP UP NEEDED TO HIT GLOBAL TARGETS AND SOMETIMES EVEN THE CITY'S OWN TARGETS.

NATIONAL AND STATE/PROVINCIAL GOVERNMENTS ARE EVEN SLOWER IN PROVIDING MUCH NEEDED SUPPORT FOR CITY EFFORTS AND THE EFFORTS OF THE CLEAN ENERGY AND WATER ACTION PEOPLE.



ARE ENERGY COMPANIES ON SIDE?

WEALTHY STATUS QUO OIL AND CHEMICAL FIRMS ARE DOING EVERYTHING THEY CAN TO SLOW, STOP OR REVERSE THE SHIFT TO CLEAN ENERGY AND WATER TECH, THROUGH THE ELABORATE TENTACLES THEY'VE DEVELOPED OVER DECADES IN THE CORRIDORS OF POWER EVERYWHERE, AND THROUGH SOCIAL MEDIA.

DESPITE THESE DIFFICULTIES, MOST HUMANS WANT TO SAVE OUR SPECIES AND THERE IS MUCH POSITIVE ACTIVITY, WHICH WE HOPE WILL GROW MOMENTUM EXPONENTIALLY, CREATING ADOPTION TIPPING POINTS THAT DRIVE THE TRANSITION.

CLIMATE / ENVIRONMENT / SCIENCE

Climate change denial is making a 'stark comeback' on social media, study finds



Greenwashing and lies about climate change are still rampant on Twitter, Facebook, and Instagram, a new report shows.

By JUST RE CALMA [@justre calma](#)
Jan 16, 2022, 4:11 PM GMT+1 | 2 Comments 2.5k likes

[Twitter](#) [Facebook](#) [Instagram](#)

Twitter: @justre calma in New York, NY, on Tuesday, November 29th, 2022.

If you are commenting on this page, you are agreeing to our [Terms of Use](#) and [Privacy Policy](#).

Meta made millions last year on advertising that greenwashes fossil fuel companies and spreads disinformation about climate change according to a new report. And outright climate denialism exploded on



Hochul has often touted New York's climate law as "nation-leading" — but she's starting to worry about how much it'll cost. | Office of the Governor

Hochul Throws Climate 'Grenade' Into Budget Talks

Colin Kinniburgh / April 4, 2023

Last-minute legislation would transform New York's climate law, allowing significantly higher emissions over the next decade.

[Facebook](#) [Twitter](#) [Email](#) [Print](#)

WILL HUMANITY SAVE ITSELF?

IT DEPENDS ON ORDINARY CITIZENS AND CITIES!

1. NATIONAL GOVERNMENTS, ESPECIALLY LARGE ONES MANAGING THE BIGGEST ECONOMIES ARE REACTIVE. DON'T PLAN MUCH FOR THE FUTURE.

AS LONG AS WEALTHY CORPS/BIG GOVERNMENT COFFERS ARE FILLED THROUGH MONTHLY BILLS/TAX/DONATIONS, THEY SADLY ARE NOT MOTIVATED TO CHANGE QUICKLY.

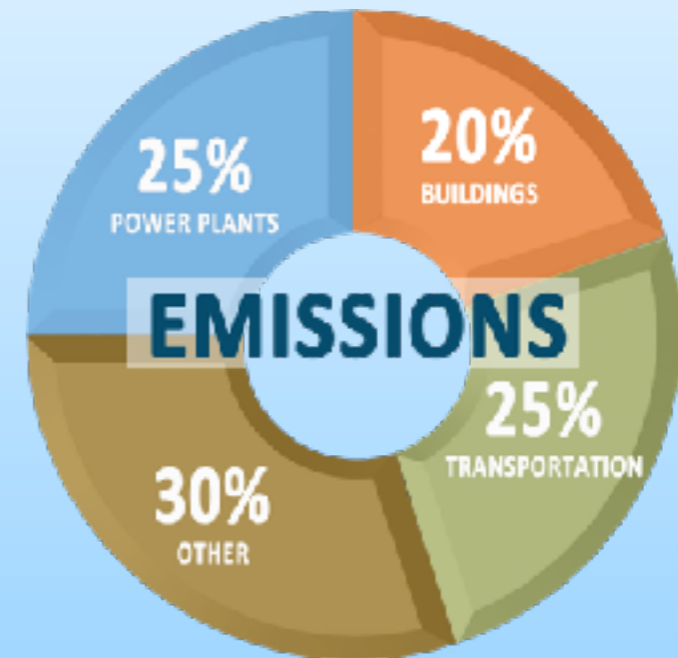
BUT THEY REACT TO MARKET DEMAND.

IF CITIZENS DRIVE ELECTRIC VEHICLES, ELECTRIFY HOMES, AND BUSINESSES FOLLOW SUIT, REVENUES DRAMATICALLY SLOW. REVENUES FLOWING TO RUSSIA, THE MIDDLE EAST, THE OIL SANDS, THE USA FRACKERS, THE BIGGEST GOVERNMENTS, THE SLOWEST POLITICAL PARTIES.

2. LOCAL GOVERNMENTS ARE REACTIVE TOO, BUT SENSITIVE TO CITIZEN STRUGGLES AND MORE NIMBLE. THEY PLAN FOR THE FUTURE AND ARE ACTION- ORIENTED.

3. ELECTRIC VEHICLES, SOLAR ROOFTOP/BATTERIES & RENEWABLES ARE LEADING THE DEMAND SHIFT BECAUSE THEY ARE SIMPLE, WITH VIABLE COMMERCIALIZATION MODELS.

4. NOW WE NEED DEMAND FOR HEAT IN BUILDINGS TO SHIFT - IT'S MORE COMPLICATED, THAT'S PARTLY WHY IT'S SLOW. THAT'S ALSO WHY IT'S THE MOST IMPORTANT THING CITIES CAN SUPPORT TO HELP SAVE THE PLANET.

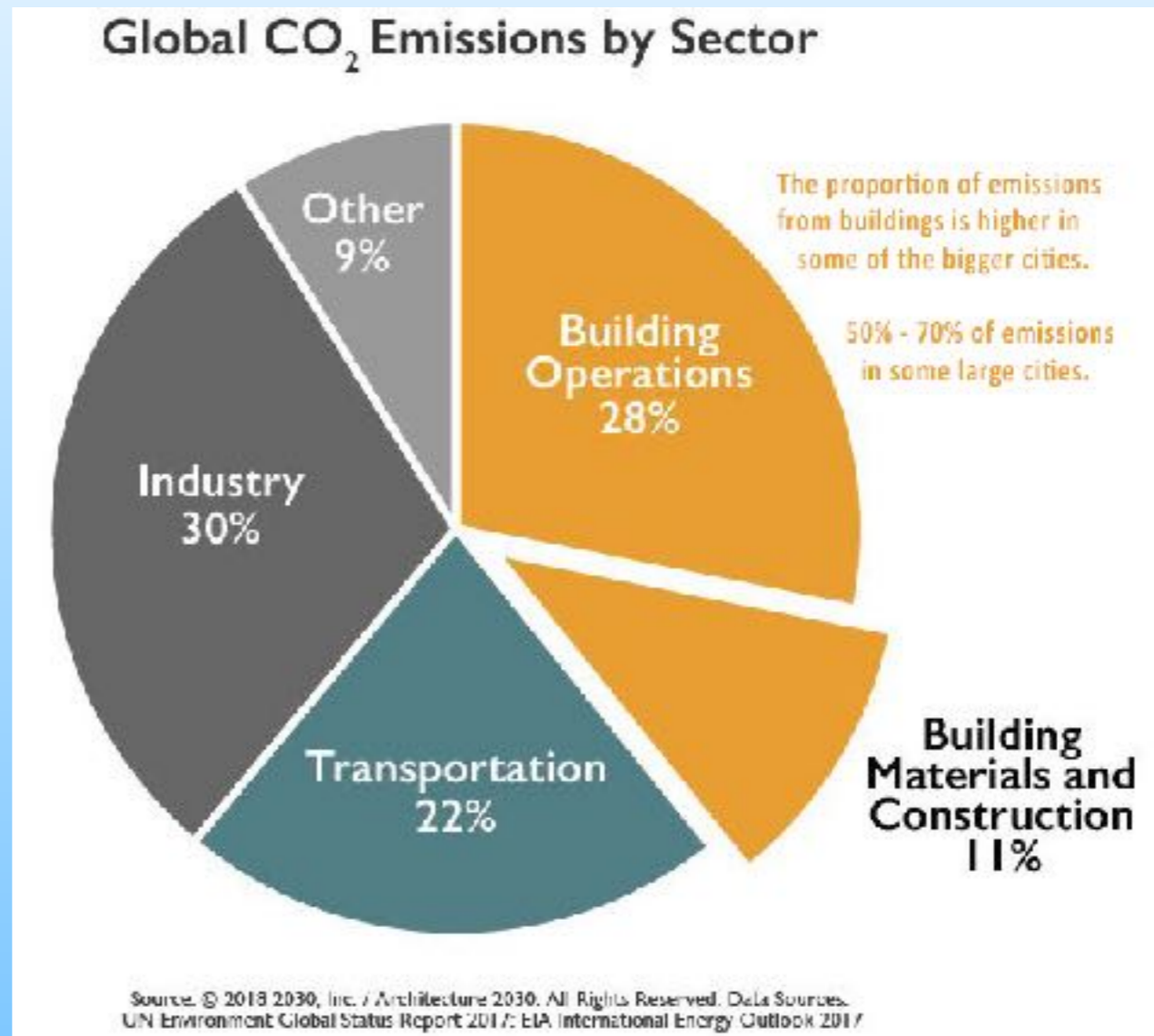


GLOBAL EMISSION SOURCES

BUILDINGS ARE A KEY ENERGY USER

CITIES CAN BREAK THE COMPLEX BUILDING ELECTRIFICATION PUZZLE INTO SMALLER DIGESTIBLE CHUNKS.

ACTIONS THAT CREATE A REGULATORY FRAMEWORK FOR THE CONSTRUCTION INDUSTRY, AND SOME VIABLE COMMERCIALIZATION MODELS FOR CITIZENS.



ENERGY USE EXPRESSED AS EMISSIONS


APPLY TODAY FOR FCM GRANTS !

Atlantic Canada > News


Charlottetown, Stratford win national climate action award

Atlantic Briefs Desk | Posted: Jan. 17, 2023, 9:48 a.m. | Updated: Jan. 17, 2023, 9:48 a.m. | 2 Min Read


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High uptake on home energy upgrades as Stratford, P.E.I. wraps up Switch program funding
UPDATED JUN. 2, 2023 | 7 MIN READ



Charlottetown residents can save money through new solar-powered program
UPDATED OCT. 7, 2021 | 5 MIN READ



Energy efficiency supports for homes coming to Charlottetown, Stratford
UPDATED JUL. 13, 2021 | 2 MIN READ

<https://fcm.ca/en/news-media/news-release/fcm-announces-the-winners-the-2022-sustainable-communities-awards/backgrounder>

https://www.charlottetown.ca/news/current_news/switch_charlottetown_award

<https://www.saltwire.com/atlantic-canada/news/charlottetown-stratford-win-national-climate-action-award-100815040/>

SINCE THE LAUNCH OF BOTH MUNICIPAL PROGRAMS IN JULY OF 2021, OVER **1200 PARTICIPANTS** HAVE CALLED IN TO PARTICIPATE. WITH OVER **400 PROJECTS COMPLETED AND OVER 150 IN PROGRESS AS OF JANUARY 2023**, THE ENVIRONMENTAL IMPACT OF THE SWITCH PROGRAM HAS BEEN SIGNIFICANT. THE PEI SWITCH PROJECTS HAVE **HELPED HOMEOWNERS INVEST A TOTAL OF \$8.5 MILLION IN GREEN ENERGY PROJECTS LIKE SOLAR, HEAT PUMPS AND INSULATION**, AND HAVE REDUCED GREENHOUSE GAS EMISSIONS OF THESE PROPERTIES BY OVER 40% ON AVERAGE.

WITH MORE THAN **50 ISLAND CONTRACTORS ENGAGED IN THE PROGRAM, ALMOST 200 JOBS HAVE BEEN CREATED** THROUGH THE SWITCH PROGRAMS. JULIAN BOYLE, PRESIDENT OF THE PROGRAM ADMINISTRATOR, PACE ATLANTIC CIC SAYS, "WE'VE NEVER SEEN COMMUNITIES UPTAKE PROGRAMMING LIKE IN CHARLOTTETOWN AND STRATFORD. **WITH 3-5% OF THE HOUSING STOCK BEING RETROFITTED ANNUALLY THEY ARE SETTING THE BAR FOR THE REST OF CANADA IN THE ENERGY TRANSITION AND RACE TO NET-ZERO.**"

TORONTO

**JACK BOLLAND, MGR, ENVIRONMENT
& CLIMATE DIVISION:**

“ONTARIO PROVINCIAL CABINET
MINISTERS SAY THEY STILL SUPPORT
THE TORONTO GREEN STANDARD.”

“WE BECAME INVOLVED EARLY IN THE
ENERGY REQUIREMENTS OF PROJECTS
THROUGH LAND USE PROCESSES IE.
REZONING AND SITE PLAN APPROVALS.”



“WE ARE SEEING THE EMERGENCE OF FINANCIALLY SOLID ENERGY DEVELOPERS WHO VIEW CLEAN ENERGY AS INTRINSIC TO THEIR BRAND. THEIR ARCHITECTS WANT TO DESIGN BUILDINGS THAT ARE RELEVANT FOR 120 YEARS. THEY’RE INCREASINGLY CONCERNED WITH REPUTATION DAMAGE. WE THINK HEAT PUMPS ARE BECOMING LIKE ELECTRIC VEHICLES, THE OBVIOUS PURCHASE.”

“WE LEAD BY EXAMPLE THROUGH TCHC, REPURPOSED INDUSTRIAL LANDS, CITY OWNED ARENAS, COMMUNITY CENTRES - ABOUT 5% OF EMISSIONS COME FROM CITY OWNED ASSETS.”

TORONTO

NET ZERO BY 2030 - IT WILL BE IMPOSSIBLE TO USE ANY SIGNIFICANT AMOUNT OF GAS

NOW AT TORONTO GREEN STANDARD 4 APPROVED UNANIMOUSLY BY COUNCIL IN 2022 REFLECTS BC STEP CODE AND THE TWO ENTITIES WORK TOGETHER.

- ANOTHER UPTICK COMING IN 2026
- THE FINAL ONE (TGS 6) BEFORE 2030



TGS 4 NO LONGER USES REFERENCE BUILDINGS, NOW YOUR BUILDING MUST MEET METRICS:

- **EUI - ENERGY USE INTENSITY**
- **PETI - HOW WELL YOUR BUILDING IS INSULATED**
- **GHGI - GREENHOUSE GAS INTENSITY**

TECHNOLOGIES: GEO-EXCHANGE HEAT PUMP SYSTEMS, AIR-TO-AIR, AIR-TO WATER. DISTRICT ENERGY PROJECTS ARE BIG. LAST YEAR TORONTO MAPPED THE ENTIRE CITY SHOWING TRUNK LINES ETC., RE WASTEWATER RECLAIM OPPORTUNITIES. NOW EXPLORING DEEP GEOTHERMAL, DIRECT HIGH TEMP ENERGY HEAT EXTRACTION.

CANADA NECB BUILDING CODE SUPPORT

CANADA'S GOAL:

ACHIEVING NET ZERO ENERGY READY BUILDINGS BY 2030

PERFORMANCE TIERS TO MAXIMIZE ENERGY EFFICIENCY, ENABLE PROVINCES AND TERRITORIES TO INCREMENTALLY ADOPT HIGHER LEVELS OF PERFORMANCE WITHIN ONE CODE.

- **TIER 1: BASELINE TARGET**
- **TIER 2: IMPROVEMENT OF 25% OVER TIER 1**
- **TIER 3: IMPROVEMENT OF 50% OVER TIER 1**
- **TIER 4: IMPROVEMENT OF 60% OVER TIER 1**



UPDATED IN MARCH 2023

CANADA NECB BUILDING CODE SUPPORT

KEVIN LOCKHART, RESEARCH MANAGER AT EFFICIENCY CANADA:

FEDS HOPE FOR A CONVERSATION BETWEEN PROVINCES AND CITIES

- ENCOURAGE TOP TIER ADOPTION BY PROVINCE - ATTACK WORST BUILDINGS FIRST
- HELP CONDUCT COMPLIANCE STUDIES
- MAKE AMENDMENTS DURING PROVINCIAL ADOPTION PROCESS
- MAKE ADJUSTMENTS TO LAND USE, SETBACKS ETC.
- BUILD AWARENESS - BC SUCCESS WITH ENERGY SUB CODE
- UTILITIES CAN OFFER ENERGY MODELLING, COACHING FOR BUILDING OFFICIALS AND OTHERS - BC & ONT

<https://www.energycanada.org/empowering-municipalities-to-adopt-net-zero-building-codes/>

TOOLS:

- NECB BUILDING CODE UPDATE 2023
- NATIONAL GREEN BUILDING STRATEGY
- NET ZERO BUILDING CODE ACCELERATION FUND
- FCM GREEN BUILDING FUND
- LC3 WEB SITE

ABACUS: 70% OF CANADIANS STRONGLY SUPPORT OR SUPPORT NET ZERO ENERGY READY BUILDING CODES.

ALMOST 650 MUNICIPALITIES HAVE NOW DECLARED A CLIMATE EMERGENCY



FOCUSES ON 5 KEY BUILDING ELEMENTS

1. BUILDING ENVELOPE
2. LIGHTING
3. HEATING, VENTILATING AND AIR CONDITIONING SYSTEMS
4. SERVICE WATER HEATING
5. ELECTRICAL POWER SYSTEMS AND MOTORS

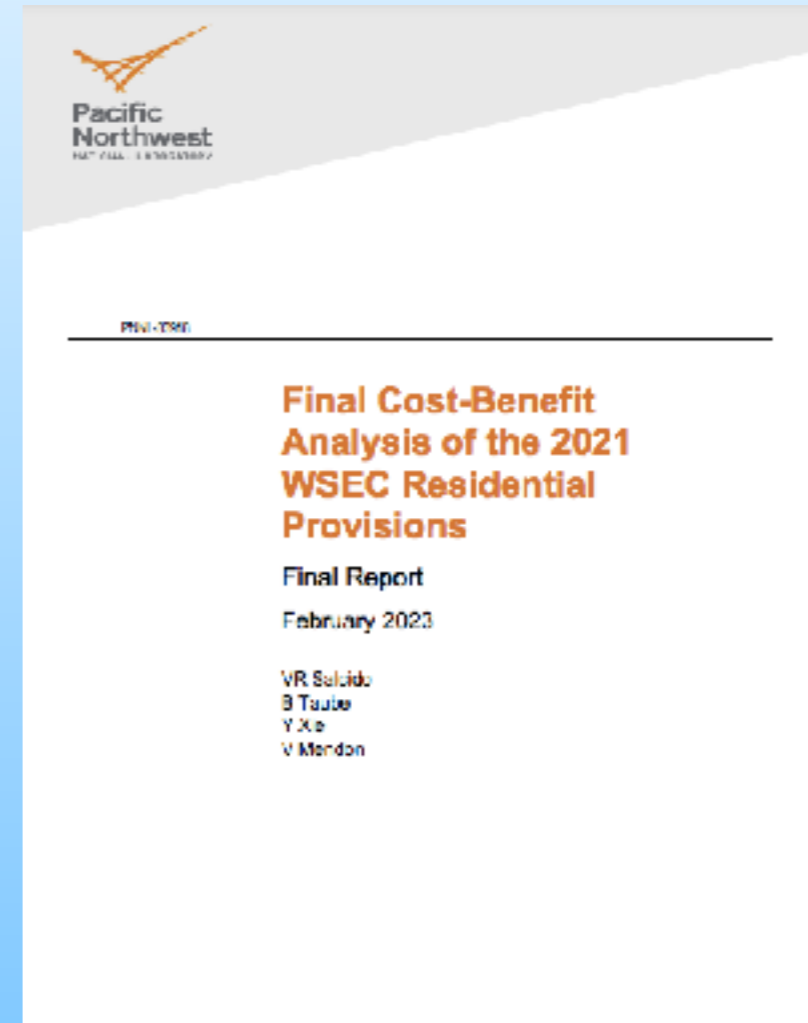
EXISTING BUILDINGS - COMING IN 2025

A KEY TOOL FOR STATES IS ADOPTION OF STANDARDS REFERENCING BUILDING CODES

THE WASHINGTON STATE BUILDING CODE COUNCIL'S RECENT REVISIONS TO THE STATE'S ENERGY CODE — UPDATED EVERY THREE YEARS — REQUIRES ENERGY-EFFICIENT HEAT PUMPS FOR SPACE AND WATER HEATING IN ALL NEW RESIDENTIAL BUILDINGS. IT TAKES EFFECT ON JULY 1.

RESEARCHERS AT PACIFIC NORTHWEST NATIONAL LABORATORY ESTIMATE THAT UPDATES WILL CUT **12.1 MILLION METRIC TONS** OF CARBON DIOXIDE STATEWIDE OVER 30 YEARS.

THAT'S THE EQUIVALENT OF WHAT MORE THAN 2.6 MILLION PETROL VEHICLES PRODUCE IN ONE YEAR.



WORLD'S BIGGEST CITIES MOVING AGGRESSIVELY



Three quarters of C40 cities are now decreasing their per capita emissions at a faster rate than their own countries.

Megacity	Innovator
<p>Cities that show exceptional climate leadership at the global level, and have an urban population that currently/is expected to exceed 3 million or more people by 2030.</p> <p>Cities: Abidjan; Accra; Addis Ababa; Ahmedabad; Amman; Athens; Bangkok; Barcelona; Bengaluru; Berlin; Bogotá; Boston; Buenos Aires; Cape Town; Chengdu; Chennai; Chicago; Ciudad de México; Curitiba; Dakar; Dalian; Dar es Salaam; Delhi NCT; Dhaka; Durban (eThekweni); Ekurhuleni; Fuzhou; Guadalajara; Guangzhou; Hangzhou; Hanoi; Ho Chi Minh City; Hong Kong; Houston; Istanbul; Jakarta; Johannesburg; Karachi; Kolkata; Kuala Lumpur; Lagos; Lima; Lisbon; London; Los Angeles; Madrid; Medellín; Melbourne; Miami; Milan; Montréal; Mumbai; Nairobi; Nanjing; New York City; Paris; Philadelphia; Phoenix; Qingdao; Quezon City; Quito; Rio de Janeiro; Rome; Salvador; San Francisco; São Paulo; Seattle; Seoul; Shenzhen; Sydney; Tel Aviv-Yafo; Tokyo; Toronto; Tshwane; Warsaw; Washington, DC; Wuhan; Zhenjiang.</p>	<p>Cities that show exceptional climate leadership at the global level, but do not meet the population/size criteria of a Megacity.</p> <p>Cities: Amsterdam; Auckland; Austin; Copenhagen; Freetown; Heidelberg; New Orleans; Oslo; Portland; Rotterdam; Stockholm; Vancouver.</p>



HOW CITIES CAN SHIFT FROM GAS TO RENEWABLES

- BAN GAS AND INCENTIVIZE ELECTRICITY IN BUILDINGS
- INTRODUCE BUILDING EFFICIENCY STANDARDS
- INTRODUCE EMISSIONS PERFORMANCE STANDARDS
- CAPITALIZE ON LAND-USE REGULATIONS
- SET ZERO-EMISSION TARGETS
- ADVOCATE FOR AN END TO GAS
- CREATE A ROADMAP TO ASSESS YOUR CITY'S BEST CLEAN ALTERNATIVES TO GAS & SUPPORT REPLACEMENTS BY:
 1. PREPARING INFRASTRUCTURE
 2. CREATING FUEL SWITCHING REGULATORY FRAMEWORK
 3. CONNECTING THE APPLIANCE PROGRAM TO POLICIES SUCH AS HEALTH, ENERGY POVERTY, AND SKILLS DEVELOPMENT
- PROMOTE FOUR MAIN BENEFITS OF ENDING GAS:
 1. CLIMATE
 2. HEALTH
 3. RESILIENCE
 4. JOBS



Measures are detailed on the C40 site via the link below, along with examples of cities taking each action, including Vancouver, Toronto, Montreal, New York City, San Francisco, LA, Seattle, Washington DC, Philadelphia, and Chicago.

https://www.c40knowledgehub.org/s/article/How-cities-can-shift-from-gas-to-renewables-in-buildings?language=en_US

EMBODIED CARBON

- **BUDAPEST, LOS ANGELES, MEXICO CITY, OSLO AND SAN FRANCISCO**, AS SIGNATORIES TO THE C40 CLEAN CONSTRUCTION DECLARATION, HAVE COMMITTED TO TAKING ACTION THAT WILL HELP MEET COLLECTIVE TARGETS TO **CUT EMBODIED EMISSIONS BY 50% IN ALL NEW BUILDINGS, MAJOR RETROFITS AND INFRASTRUCTURE PROJECTS BY 2030.**



- **VANCOUVER'S** CLIMATE EMERGENCY ACTION PLAN INCLUDES A TARGET TO **REDUCE BY 40%** THE EMBODIED CARBON IN ALL NEW BUILDINGS AND CONSTRUCTION BY 2030 (FROM A 2018 BASELINE).
- **AUSTIN'S** CLIMATE EQUITY PLAN INCLUDES A TARGET TO REDUCE THE EMBODIED CARBON IN LOCAL CONSTRUCTION BY **40%** BY 2030 (FROM A 2020 BASELINE).
- **PARIS'S** CLIMATE ACTION PLAN CALLS FOR 30% OF ALL NEW OFFICE BUILDINGS TO BE **BUILT REVERSIBLY – EASY TO ADAPT TO OTHER USES AND EVENTUALLY DISMANTLE**, ALSO KNOWN AS 'DESIGN FOR DISASSEMBLY' – BY 2030 AND 50% BY 2050. IN MARCH 2021, THE PARISIAN CONSTRUCTION PACT SETS 10 PRIORITIES TO ENSURE THE CITY BUILDS ACCORDING TO THE CLEAN CONSTRUCTION HIERARCHY.

**C40
CITIES**

AFFORDABLE CITY HOUSING PROJECTS - PH

**SENIORS
HOUSING
RETROFIT IN
HAMILTON, ON**



AFFORDABLE HOUSING IN HARLEM NY



**PORTLAND,
OREGON**



WOODSTOCK, ON



**BROOKLYN NY
RETROFIT**



NON-CITY PROJECTS WITH GREEN GRANTS & PLANNING DEPT REQUIREMENTS



**THE HOUSE (PASSIVE HOUSE)
AT CORNELL U IN LONG ISLAND NY**



**TORONTO CONDOS AT LILLIAN PARK GEOTHERMAL
SHARED WITH CITY SENIORS TOWER NEIGHBOUR**



**KINGSTON RD TORONTO BEACHES - KOSTADIN DEMOROV
SOLAR, GEO, VRF, 28% AFFORDABLE, (UKRANIAN FAMILIES)**



**PASSIVE HOUSE AT WINTHROP CENTER,
BOSTON OFFICE TOWER**

GEOHERMAL SINGLE FAMILY HOME COMMUNITIES



MATTAMY 300 GEOHERMAL HOMES IN MARKHAM, ONTARIO



DANDELION, 1000+ GEO RETROFITS IN NY, CONN & MASS, USA



MORRISBURG, ONTARIO, ONE OF HUNDREDS OF GEOHERMAL RETROFITS (PHOTO OGA)



BABCOCK RANCH 2000 GREEN & RESILIENT GEOHERMAL HOMES IN FLORIDA



WHISPER VALLEY 2500 GEOHERMAL HOMES IN AUSTIN TEXAS

BIG CLEAN DISTRICT ENERGY COMMUNITIES



Geothermal at Lulu Island in downtown Richmond, BC, expansion will take it to 50 M sq ft, cutting GHG 34,000 tonnes per year.



Geo for homes, businesses and institutions 30,000 residents at Blatchford in downtown Edmonton, Alberta.



Geo for homes, businesses and institutions 20,000 residents at Lakeview Village in downtown Mississauga, Ontario.



Wastewater energy reclaim for 37 buildings at False Creek in Vancouver, BC.

EMBLEMATIC PROJECTS



LARGE GEOTHERMAL
PROJECTS AT:

- CANADA'S
PARLIAMENT BUILDINGS
- U OF T KING'S COLLEGE
CIRCLE, TORONTO



URBAN PLANNING FOR CLEAN ENERGY BUILDINGS, AND BEYOND BUILDINGS



GREEN TRANSPORTATION & SPACE FOR WALKING



GOOD CYCLING LANES



PEDESTRIAN MALLS



RECREATIONAL TRAILS



ELECTRIC VEHICLE CHARGING

MORE TRANSIT INVESTMENT

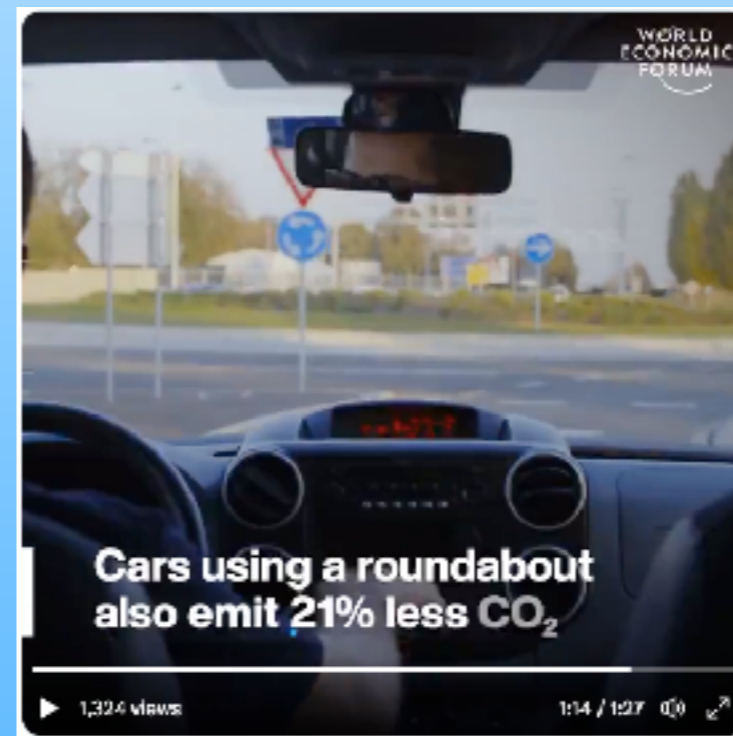
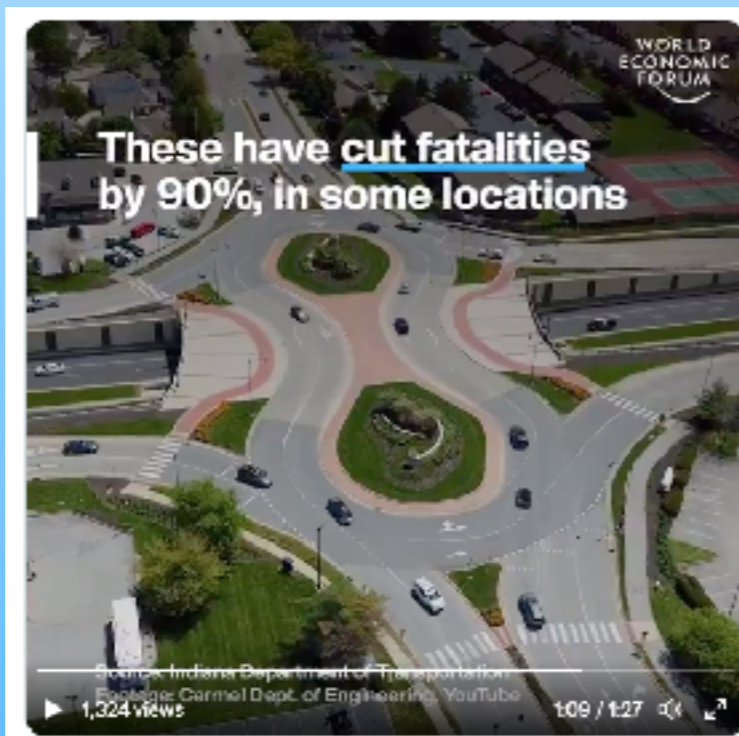
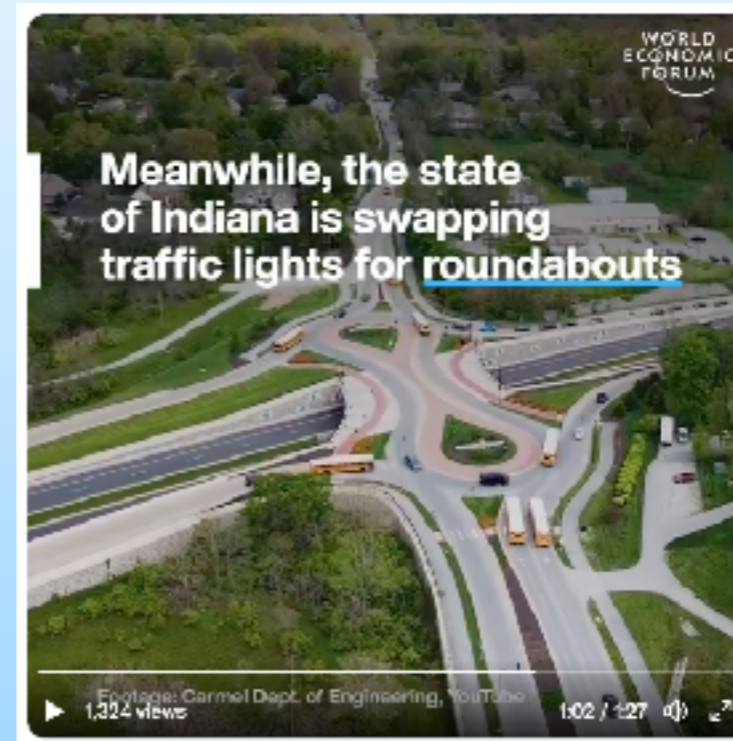
BUS RAPID TRANSIT (BRT)



ELECTRIC BUSES, ELECTRIC LRT, ELECTRIC SUBWAY TRAINS

SAFER LEFT TURNS & MORE ROUNDABOUTS

WORLD ECONOMIC FORUM VIDEO LINK
<https://twitter.com/jamesvgingerich/status/1645800873032044552>



LAST WEBINAR: CITIES MANAGING FOOD WASTE



NEW MEXICO
PROGRAM

[https://
www.nmrestaurant
s.org/food-waste-
management-
restaurant/](https://www.nmrestaurants.org/food-waste-management-restaurant/)

REDUCE FOOD LOSS IN SUPPLY CHAINS

IN MANY CITIES FOOD LOSS HAPPENS BEFORE IT REACHES CONSUMERS DUE TO TRANSPORT DELAYS OR POOR STORAGE CONDITIONS.

WHILE CITIES TYPICALLY HAVE LIMITED CONTROL OVER SUPPLY CHAINS, THEY CAN HELP STRENGTHEN URBAN-RURAL LINKAGES AND IMPROVE INFRASTRUCTURE.

IMPROVE SANITATION AND ELECTRICITY FOR COLD STORAGE. AT MARKETS AND DISTRIBUTION HUBS

SUPPORT COLLECTIVES THAT PROVIDE VALUE-ADDED ACTIVITIES, SUCH AS INDUSTRIAL KITCHENS PRESERVING EXCESS FRUIT AND VEGETABLES.

CREATIVITY IN KENYA

NEW DRIED MANGO PRODUCT HAS SIGNIFICANTLY REDUCED RATES OF FOOD LOSS IN MANGO PRODUCTION.

ENCOURAGE FOOD-WASTE REDUCTION

BY BUSINESSES FOR 14:1 ROI

FOOD WASTE AND RECOVERY CAN HAVE POSITIVE ECONOMIC BENEFITS FOR BUSINESSES AND THE LOCAL ECONOMY, AND CAN CREATE JOBS.

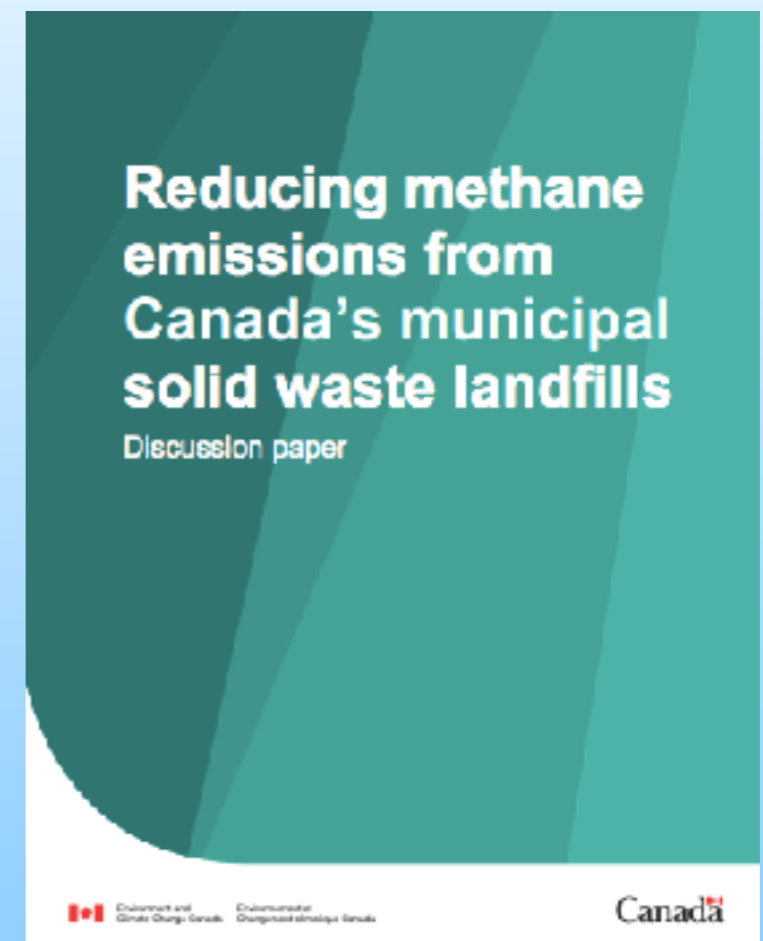
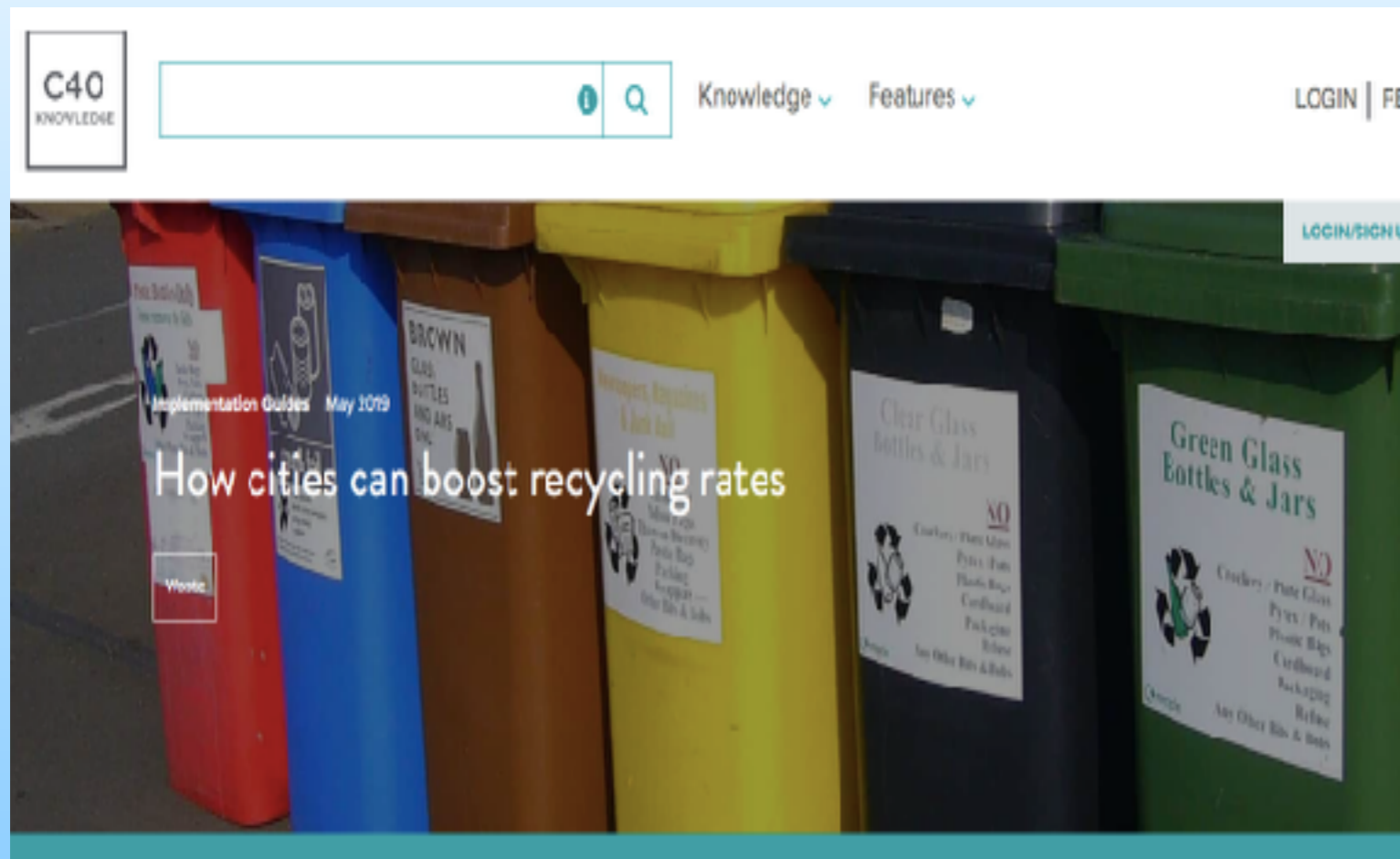
THE AVERAGE BUSINESS IS ESTIMATED TO BE ABLE TO ACHIEVE A 14:1 POSITIVE RETURN ON INVESTMENT IN REDUCING FOOD LOSS AND WASTE.

PROVIDE ONGOING TECHNICAL ASSISTANCE TO BUSINESSES TO MEASURE AND MONITOR FOOD WASTE.

GUIDANCE AND FINANCIAL SUPPORT FOR BUSINESSES & ENTREPRENEURS TO PILOT NEW FOOD-WASTE EFFORTS

ENGAGE BUSINESSES THROUGH FOOD-WASTE CAMPAIGNS AND 'CHALLENGES'

C40 & CANADA - LANDFILL RESOURCES TO REDUCE METHANE



https://www.c40knowledgehub.org/s/article/How-cities-can-boost-recycling-rates?language=en_US

<https://www.canada.ca/en/environment-climate-change/services/canadian-environmental-protection-act-registry/reducing-methane-emissions-canada-municipal-solid-waste-landfills-discussion.html>

BRITISH COLUMBIA AGRICULTURE SOLUTIONS

LIVESTOCK AND MANURE MANAGEMENT

LIVESTOCK AND MANURE MANAGEMENT ARE SIGNIFICANT CONTRIBUTORS TO AGRICULTURAL GHG EMISSIONS. THE FOLLOWING PRACTICES CAN SEQUESTER CARBON AND / OR MITIGATE GHG EMISSIONS FROM LIVESTOCK AND MANURE:

- USE LIVESTOCK FEED ADDITIVES
- PRACTICE ROTATIONAL GRAZING TO SEQUESTER CARBON IN THE SOIL
- SELECT HIGH QUALITY FEED THAT WILL REDUCE METHANE RELEASED FROM ENTERIC FERMENTATION
- MANAGE MANURE TO REDUCE METHANE AND NITROUS OXIDE
 - COVER MANURE STORAGE FACILITIES
 - OPTIMIZE MANURE USE WITH NUTRIENT MANAGEMENT PLAN
 - CAPTURE AND COMBUST METHANE FROM MANURE STORAGE

SOIL CONSERVATION AND CARBON SEQUESTRATION

AGRICULTURAL ECOSYSTEMS HOLD SUBSTANTIAL CARBON RESERVES. THE FOLLOWING FARM PRACTICES PROMOTE CARBON SEQUESTRATION BY EITHER INCREASING STORAGE OF CARBON OR REDUCING THE LOSS OF STORED CARBON:

- ENHANCE NITROGEN MANAGEMENT THROUGH NUTRIENT MANAGEMENT PLANNING
- REDUCE TILLAGE
- DECREASE BARE FALLOW
- RETURN CROP RESIDUES TO THE SOIL
- ESTABLISH AGROFORESTRY SYSTEMS
- INCREASE COVER CROPPING
- IMPLEMENT ROTATIONAL GRAZING

ENERGY CONSERVATION AND FUEL SWITCHING

EACH FARM OPERATION HAS DIFFERENT OPPORTUNITIES FOR ENERGY CONSERVATION AND FUEL SWITCHING. SOME EXAMPLES INCLUDE:

- CONDUCT AN ON-FARM, ALL-FUEL ENERGY ASSESSMENT TO IDENTIFY ENERGY SAVING OPPORTUNITIES
- ENSURE THAT ALL HEATING AND COOLING SYSTEMS ARE IN GOOD WORKING ORDER
- USE TIMERS, SENSORS OR VARIABLE SPEED DRIVES ON VENTILATION, HEATING, COOLING AND LIGHTING SYSTEMS
- REPLACE FOSSIL-FUEL POWERED EQUIPMENT WITH ELECTRICAL PUMPS AND MOTORS

<https://www2.gov.bc.ca/gov/content/industry/agriculture-seafood/agricultural-land-and-environment/climate-action/reducing-agricultural-ghgs>



ON-FARM ENERGY PRODUCTION

RENEWABLE ENERGY SOURCES CAN DISPLACE FOSSIL FUEL USE, REDUCING GHG EMISSIONS ON AND OFF-FARM. THEY CAN ALSO HELP DECREASE RELIANCE ON ENERGY SOURCES WITH VOLATILE PRICES, • [ANAEROBIC DIGESTION \(PDF, 2.2 MB\)](#)

- GEOTHERMAL
- SOLAR PHOTOVOLTAC
- SOLAR THERMAL
- WIND TURBINES
- RECHARGEABLE BATTERIES



CHINA IS HITTING TARGETS EARLY

ELECTRIC CARS IN CHINA

Surging EV sales put China ahead of government targets

Officials call on industry for tech breakthroughs and consolidation



The Hongguang Mini EV, China's top-selling electric, was shown off this week at the World New Energy Vehicle Congress in Haikou. (Photo by CK Tan)

CK TAN, Nikkei staff writer
September 19, 2022 11:00 JST

HAIKOU, China -- Surging sales of electric vehicles have put China on track to meet government targets several years early, but officials say the industry still needs to work harder on technological breakthroughs.

Business

China seen accelerating wind, solar power installation under 5-year plan, reaching 2030 renewable target ahead of time

- While China has not unveiled the national targets for 2025, plans by 30 provinces suggest its 2030 targets are likely to be surpassed early
- China may revise its 2030 targets to account for speedier installation pace under the current five-year plan, Refinitiv's Jin says



Wang Jia in Shanghai
Published: 11:46am, 3 Jan 2023

Win you can't get 30MP

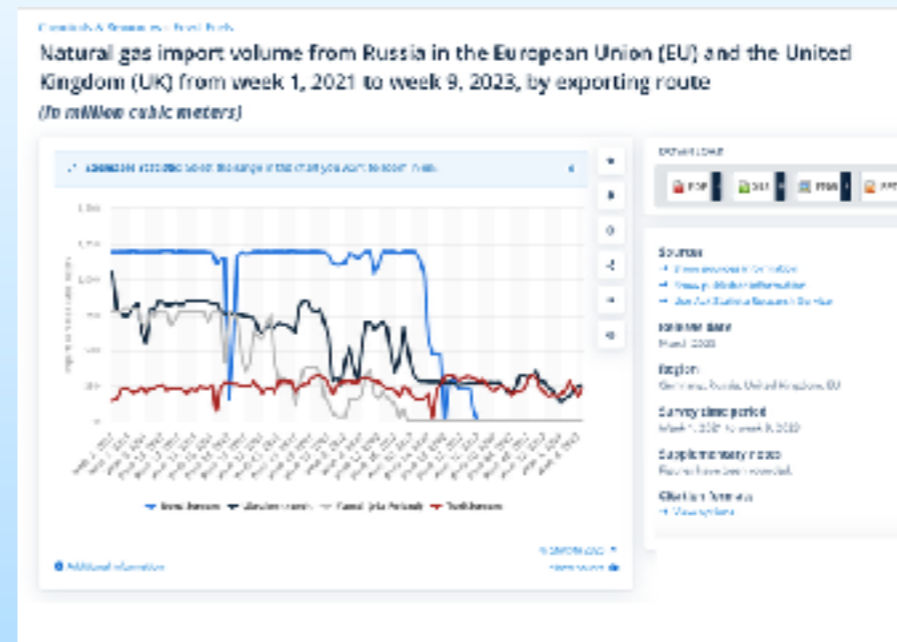
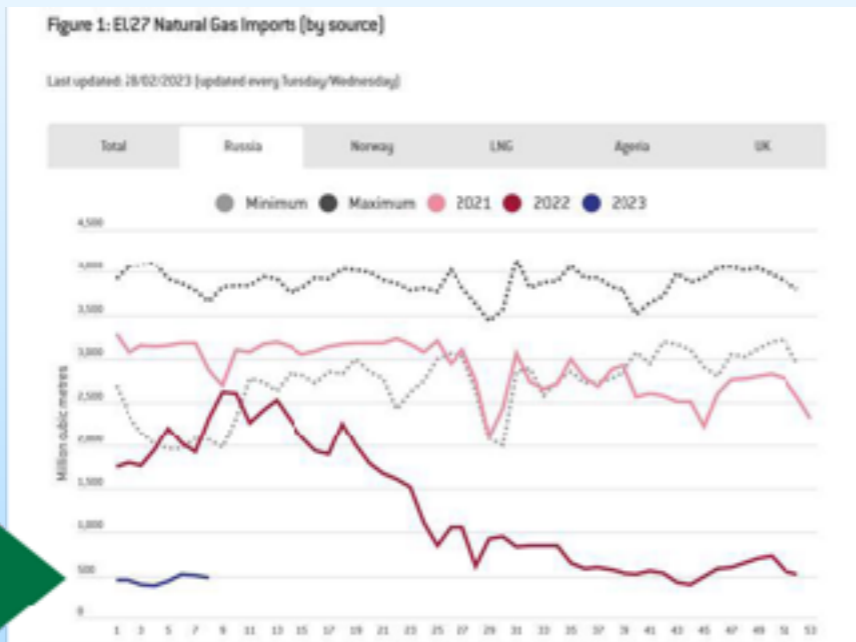
74



China is seen to be reaching the installation of wind and solar energy capacity under the current five-year plan. Photo: Shutterstock Images

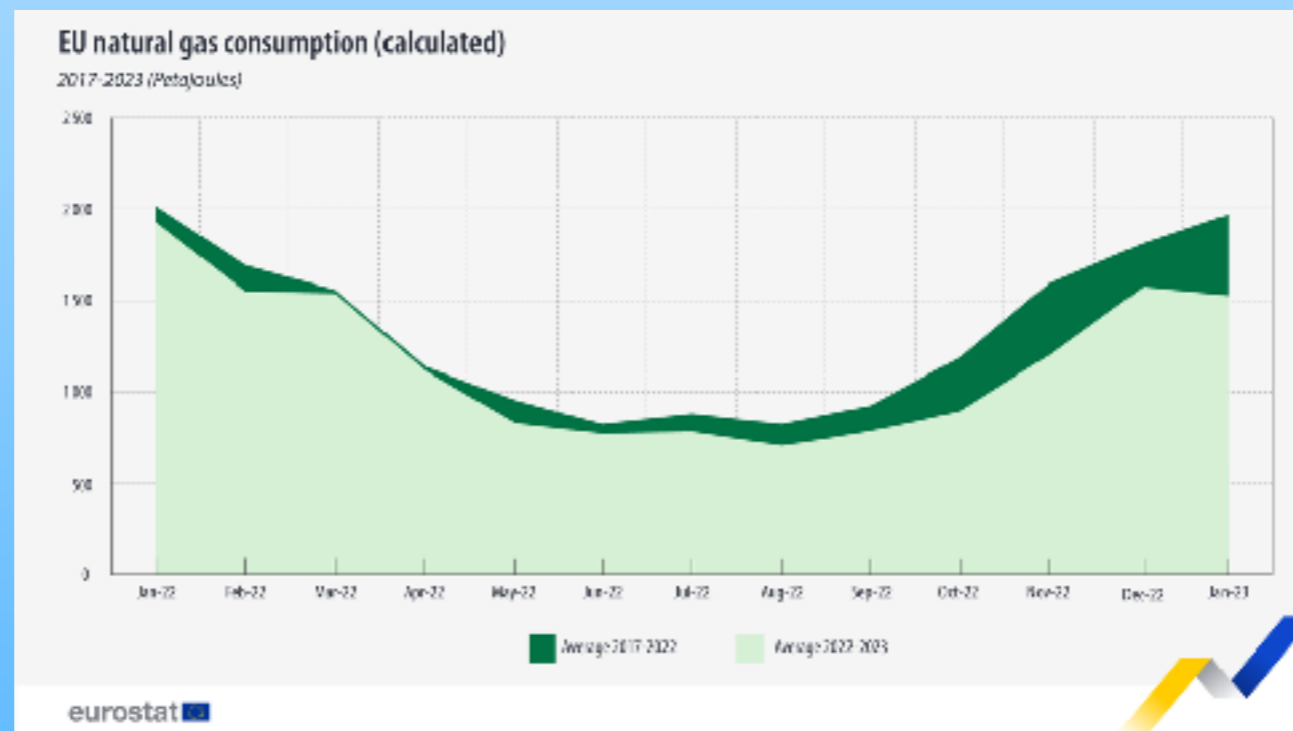
China is expected to achieve its 2030 target of installing renewable energy capacity ahead of schedule by about five years, after at least 30 provinces unveiled their respective programmes under the national five-year plan, climate analysts said.

EUROPE: UKRAINE WAR



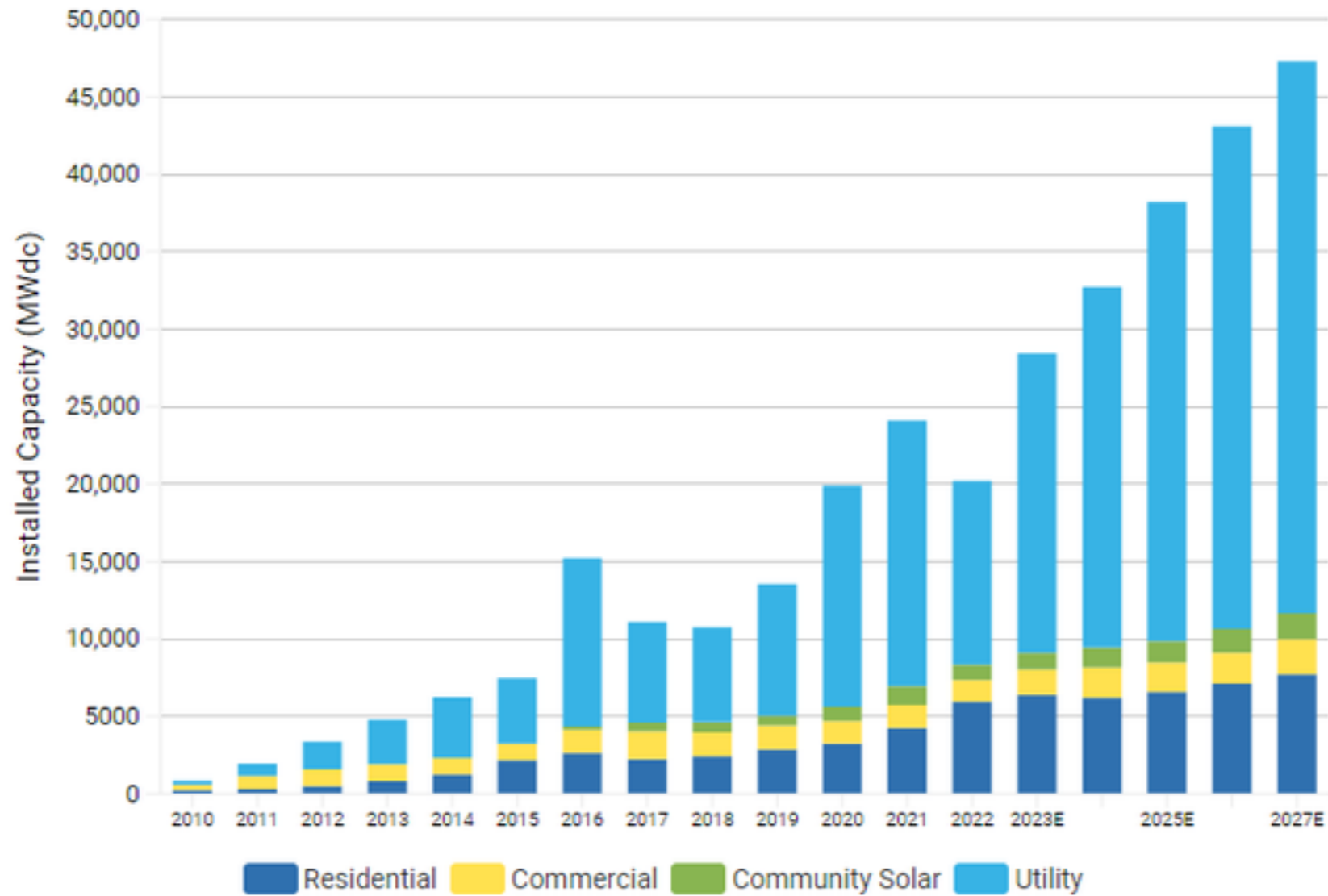
DEEP CUT TO RUSSIAN GAS IMPORTS

EU GAS CONSUMPTION DROPS BY ABOUT 25%



USA RENEWABLES

U.S. Solar PV Deployment Forecast



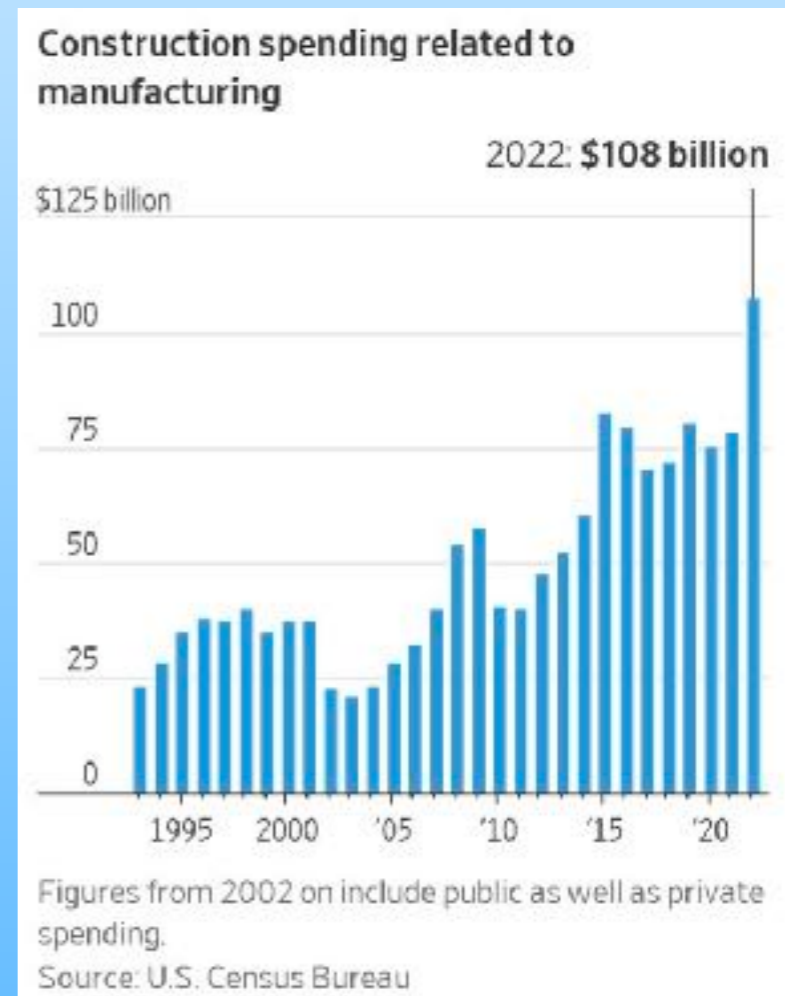
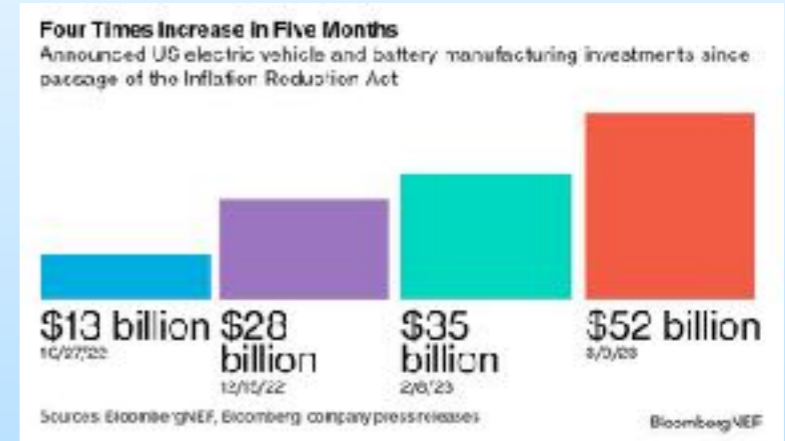
Source: [SEIA/Wood Mackenzie Power & Renewables U.S. Solar Market Insight 2022 Year in Review](#)



UPDATE ON USA CLIMATE (INDUSTRIAL POLICY) LEADERSHIP AKA THE INFLATION REDUCTION ACT

SINCE IRA INCENTIVES FOR CLEAN ENERGY MANUFACTURING AND ADOPTION OF SOLAR, ELECTRIC VEHICLES, ETC. WERE CREATED BY THE USA, BILLIONS IN CLEAN ENERGY MANUFACTURING INVESTMENTS HAVE BEEN ANNOUNCED BY MAJOR GLOBAL CORPS.

OTHER COUNTRIES ARE BOTH DELIGHTED BY US CLIMATE LEADERSHIP AND THREATENED ECONOMICALLY BY IT. SIMILAR PROGRAMS HAVE SINCE BEEN ANNOUNCED BY CANADA, EUROPE, FRANCE, AUSTRALIA AND OTHERS.



INFLATION REDUCTION ACT USA



DEMAND SIDE INTERVENTIONS

HEAT PUMPS, BUILDING ENVELOPES, SOLAR, BATTERIES, ELECTRIC VEHICLES

- ◇ HOMEOWNER CASH REBATES AND TAX CREDITS FOR INCREASING EFFICIENCY AND DECARBONIZING HOMES
- ◇ HOMEOWNER TAX CREDITS FOR INSTALLATION OF SOLAR AND BATTERIES
- ◇ CLEAN ENERGY LOAN GUARANTEES TO UNDERWRITE BANK FINANCING OF CLEAN ENERGY INITIATIVES
- ◇ INCREASED EFFICIENT HOME CREDITS FOR HOUSING DEVELOPERS FOR NEW CONSTRUCTION AND DEEP RETROITS
- ◇ TAX CREDITS FOR NEW ELECTRIC VEHICLES, USED ELECTRIC VEHICLES, AND HOME CHARGERS.
- ◇ FUNDING FOR BUILDING CODE UPGRADES FOR ZERO-EMISSION BUILDINGS
- ◇ GRANTS FOR TRIBAL COMMUNITIES THAT TRANSITION TO CLEAN, ZERO-EMISSION, ELECTRIC ENERGY SYSTEMS
- ◇ FUNDING FOR DISADVANTAGED COMMUNITIES TO REDUCE GREENHOUSE GAS EMISSIONS, MITIGATE RISKS FROM EXTREME HEAT, IMPROVE CLIMATE RESILIENCY AND REDUCE INDOOR AIR POLLUTION
- ◇ BUSINESS BUILDING TAX CREDITS FOR ENERGY USE REDUCTIONS
- ◇ GRANTS AND LOANS FOR NEW OR RETROFIT AFFORDABLE HOUSING PROJECTS THAT ADVANCE BUILDING ELECTRIFICATION, IMPROVE ENERGY AND WATER EFFICIENCY
- ◇ FINANCING FOR DOMESTIC MANUFACTURING OF HEAT PUMPS AND THE PROCESSING OF CRITICAL MINERALS
- ◇ TAX CREDITS TO ACCELERATE DOMESTIC MANUFACTURING OF SOLAR PANELS, WIND TURBINES, AND BATTERIES
- ◇ AN AGGRESSIVE NEW FEE FOR METHANE EMISSIONS

HOMEOWNER ELECTRIFICATION

Key points: 1. 30% cash rebate for heat pumps, water heaters, and EV chargers. 2. 30% tax credit for other eligible equipment. 3. Loan guarantees for clean energy financing.

RESIDENTIAL SOLAR & BATTERIES

Key points: 30% tax credit for solar panels and batteries. 10% tax credit for energy storage systems.

COMMERCIAL BUILDINGS

Key points: 30% tax credit for energy efficiency improvements. 30% tax credit for solar panels. 30% tax credit for energy storage systems.

NON-RESIDENTIAL SOLAR & BATTERIES

Key points: 30% tax credit for solar panels and batteries. 10% tax credit for energy storage systems.

PURCHASES OF ELECTRIC VEHICLES

Key points: 30% tax credit for new EVs. 30% tax credit for used EVs. 30% tax credit for home charging stations.

AMERICAN MADE SOLAR, WIND & BATTERIES

Key points: 30% tax credit for solar panels. 30% tax credit for wind turbines. 30% tax credit for batteries.

INFRASTRUCTURE INVESTMENT AND JOBS ACT



The Infrastructure Investment and Jobs Act

ELECTRIC VEHICLES & CHARGING STATIONS



\$5 BILLION IN GRANTS TO SUPPORT STATE EXPANSION OF THE ELECTRIC VEHICLE CHARGING NETWORK AND \$2.5 BILLION IN DIRECT SUPPORT TO STATION OWNERS.

THE WHITE HOUSE SAYS ITS GOAL IS 500,000 CHARGERS. OBSERVERS SUGGEST THIS IS A GOOD FIRST STEP, BUT NOT ENOUGH MONEY.

THERE ARE ABOUT 50,000 GAS STATIONS IN THE USA, MEANING A CONTRIBUTION OF ABOUT \$25,000 EACH ON AVERAGE.



PHOTO COURTESY OF THE U.S. DEPARTMENT OF ENERGY. ELECTRIC VEHICLES ARE BEING ADAPTED FOR NEW AND EXISTING PUBLIC REALTY. STATE OWNERS CAN BUILD OR LEASE PUBLIC CHARGING STATIONS. PRIVATE OWNERS CAN BUILD OR LEASE PUBLIC CHARGING STATIONS. PRIVATE OWNERS CAN BUILD OR LEASE PUBLIC CHARGING STATIONS.



GRID & BATTERIES



GRID

↳ \$66 BILLION INVESTMENT INCLUDES THE LARGEST INVESTMENT IN CLEAN ENERGY TRANSMISSION AND GRID BY AMERICAN HISTORY.

↳ \$30 BILLION INCREASE IN BORROWING AUTHORITY FOR BONEVILLE POWER ADMIN, PACIFIC NORTHWEST.

↳ \$2.5 BILLION REVOLVING LOAN FUND TO ALLOW THE DOE TO SERVE AS AN "ANCHOR TENANT" FOR UP TO HALF OF THE CAPACITY OF A NEW OR UPGRADED TRANSMISSION LINE. HELPS SECURE FINANCING.

SMART GRID & BATTERIES

↳ \$3 BILLION TO DOE 2027 SMART GRID INVESTMENT GRANT PROGRAM.

↳ \$5 BILLION GRANTS FOR GRID OUTAGES CAUSED BY EXTREME WEATHER, WILDFIRES AND NATURAL DISASTERS.

↳ \$1 BILLION IN FUNDING IS ENMARKED FOR GRID IMPROVEMENT IN BUREAU OF LAND MANAGEMENT.

↳ \$500 MILLION TO SUPPORT STATE ENERGY PROGRAM.



ELECTRIC BUSES & ELECTRIC FERRIES



\$4 BILLION MORE FOR ELECTRIC BUSES AND ZERO-CARBON BUSES.

\$2.5 BILLION FOR ELECTRIC FERRIES. THERE ARE VERY FEW ELECTRIC FERRIES OPERATING SO FAR IN NORTH AMERICA.

IN CANADA, A COUPLE HAVE RECENTLY BEEN DELIVERED TO THE BENTON, ONTARIO AREA.



ELECTRIC FERRY AT PORT GARDNER, AUSTRALIA. PHOTO COURTESY OF THE U.S. DEPARTMENT OF ENERGY.



URBAN TRANSIT



AMERICAN PUBLIC TRANSIT INFRASTRUCTURE IS IN A QUARANTINE - WITH A MULTIBILLION DOLLAR REPAIR BACKLOG, REPRESENTING MORE THAN 24,000 BUSES, 5,000 RAIL CARS, 200 STATIONS, AND THOUSANDS OF MILES OF TRACK, SIGNALS, AND POWER SYSTEMS IN NEED OF MAINTENANCE.

↳ \$20 BILLION OF NEW INVESTMENT TO MODERNIZE TRANSIT, IN ADDITION TO CONTINUING THE EXISTING TRANSIT PROGRAMS FOR FIVE YEARS AS PART OF FEDERAL TRANSIT INVESTMENT REAUTHORIZATION.

↳ NEW INVESTMENTS AND RIA REAUTHORIZATIONS PROVIDE \$8.5 BILLION IN GUARANTEED FUNDING FOR PUBLIC TRANSIT OVER THE NEXT FIVE YEARS.



REGIONAL TRAINS: THE IIA ALSO ALLOCATES \$55 BILLION IN ADDITIONAL RAIL FUNDING TO HELP STATES AND LOCALITIES WITH BACKLOG.

DESI PLEASE SWITCH TO

DYLAN MARTELLO
STEVEN WINTER ASSOCIATES



**Clean Air
Partnership**

CLIMATE SOLUTIONS WEBINAR SERIES



QUESTIONS?



CAP CLIMATE SOLUTIONS WEBINAR SERIES

WITH HOST BRUCE (BF) NAGY



Latest news on batteries, renewables and micro-grids in cities - May date TBD

Cities are meeting decarbonization goals by supporting and using renewables and batteries. What are the success stories and future trends in a rapidly changing area.



Contemporary public space & private transport planning worldwide - Sept date TBD

Cities are meeting decarbonization and public health goals through master plans, infrastructure and rules that welcome alternate vehicles, cycling, pedestrians, reduced car dominance and parking, more green spaces, trails and recreation facilities.



Climate and energy policy developments in Europe & UK

Nov date TBD - Guest: Prof Peter Strachan, Scotland.



CLIMATE SOLUTIONS WEBINAR SERIES



THANK YOU

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CLIMATE SOLUTIONS WEBINAR SERIES

