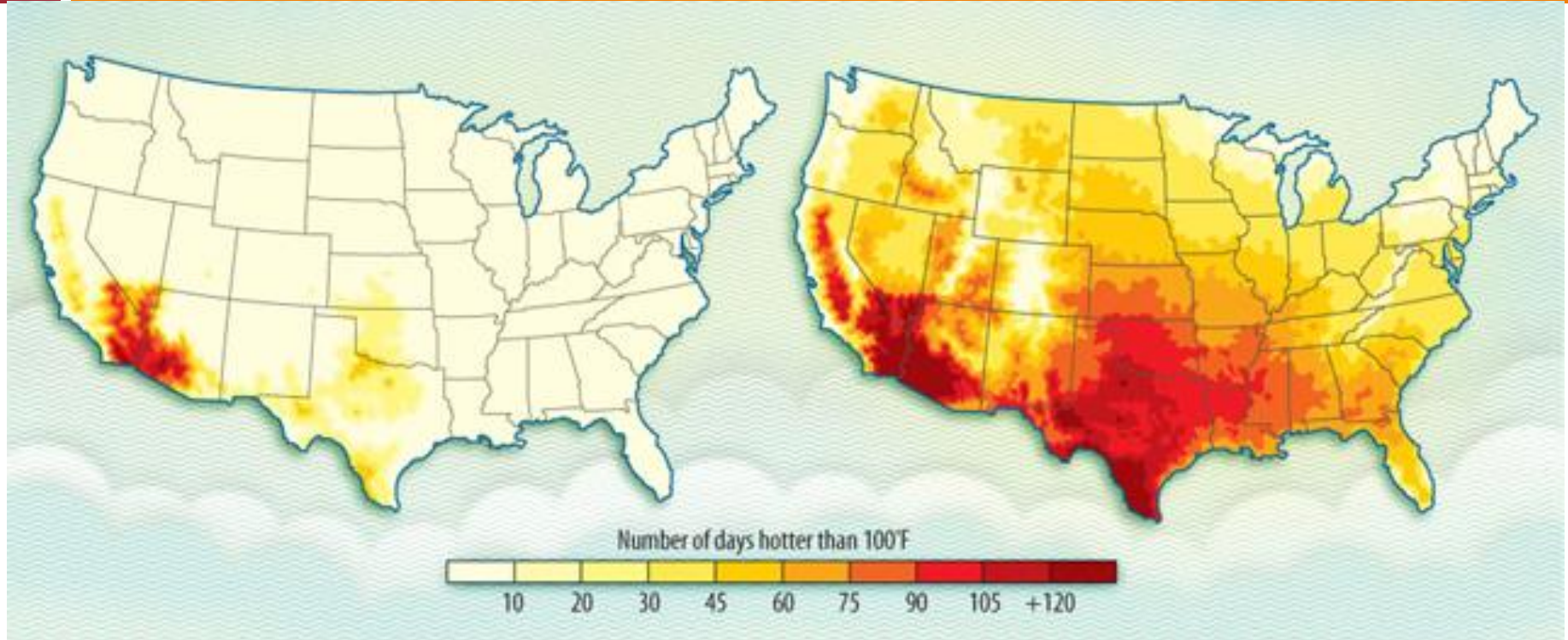


Committing to 100% Clean Energy Resolution in Louisville, KY Feasibility & Affordability



Parks and Sustainability Committee Meeting • November 29, 2018

Why 100% Clean Energy?



The map at left shows the number of days in which temperatures exceeded 100° F for **1961-1979**; the map at right shows the number of days predicted for **2080-2099** in the Intergovernmental Panel on Climate Change's "high emissions" climate-change scenario (atmospheric CO₂ at 850 ppm by 2100)—a level we are on track to reach. —**Paul Rauber**

From Sierra magazine, Sept/Oct 2011

Key points from IPCC Special Report

- 42B** Human activities are emitting 42 billion tons of CO₂ every year
- 1** Temperatures have risen 1°C since the 1850s
- 1.5** Limiting warming to 1.5°C is possible but will require unprecedented changes in all aspects of society
- 2** Paris Accord pledges are not enough to avert climate catastrophe
- 45%** The world needs to cut carbon emissions by about 45% by **2030** compared with 2010 levels to limit warming to 1.5°C



**“It’s not just about climate change,
but Louisville is missing out on the
tremendous economic opportunities of
the emerging global green economy.
These companies will not come
to Louisville without it being a
clean energy city.”**

Adam Edelen, 100 MW solar farm developer and former state Auditor

We are on a collision course



“We need to change our narrative. Instead of a call-to-arms, we need a doctrine of “mutually assured survival”—a doctrine in which all commit to the goal of 100% renewable energy.”

-Andrea Reimer, Director of the Metro Vancouver Board of Directors and City Councilor

Clean energy benefits



- **Saves \$\$**
- **Improves public health**
- **Cleaner air & water**
- **Reduces healthcare costs & disparities in outcomes**
- **Creates jobs**
- **Energy self-reliance**
- **Attracts young people & new companies**

A trend we can live with

CORPORATE RENEWABLE ENERGY BUYERS' PRINCIPLES: INCREASING ACCESS TO RENEWABLE ENERGY

70 COMPANIES

54 MILLION MWH OF DEMAND FOR RENEWABLE ENERGY

\$6 TRILLION IN MARKET CAP



www.buyersprinciples.org

“Cities not only want to shift to renewable energy but, most importantly – they can.”

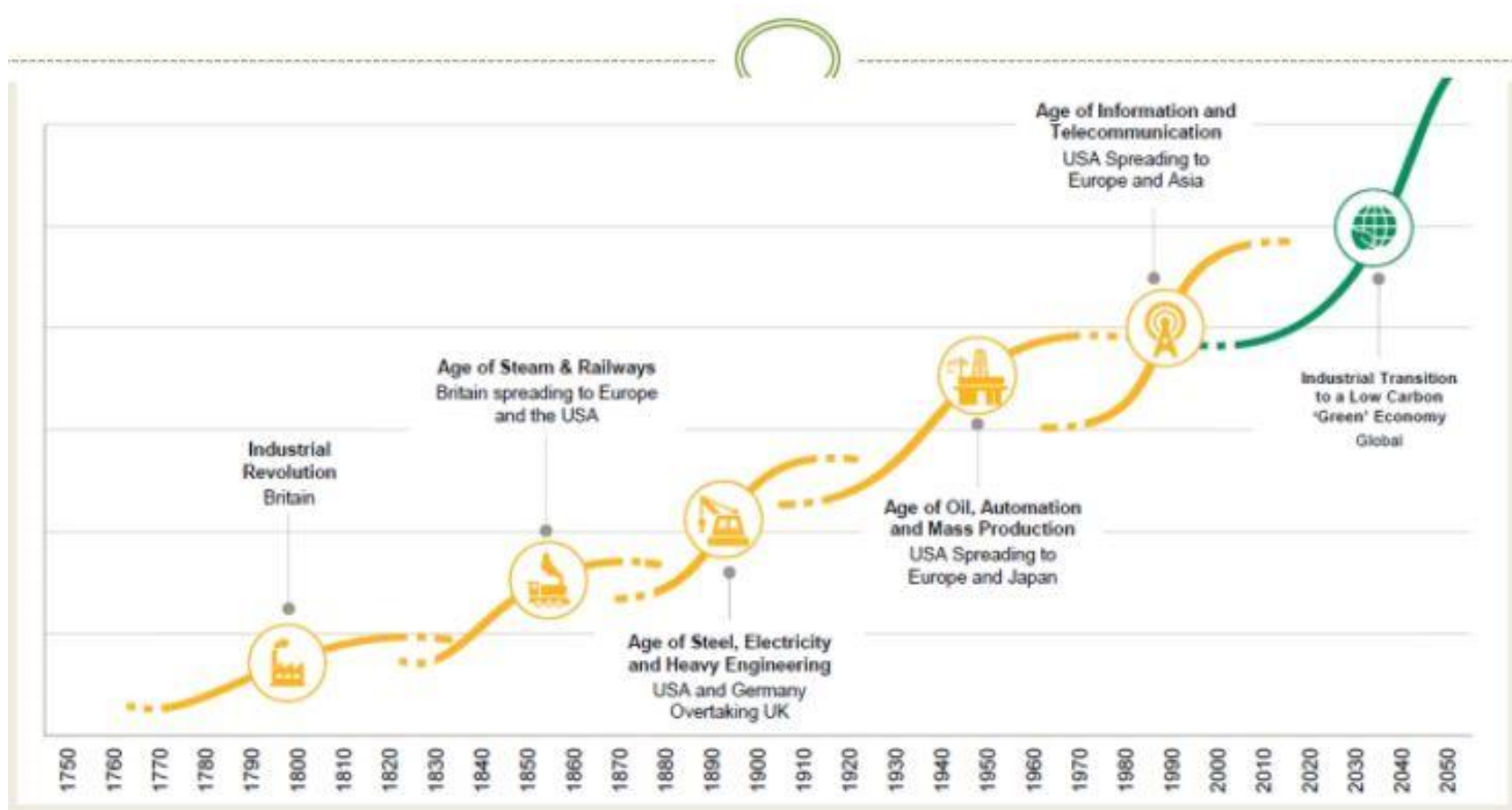
Kyra Appleby, Director of Cities, Carbon Disclosure Project (CDP)

Ready for 100



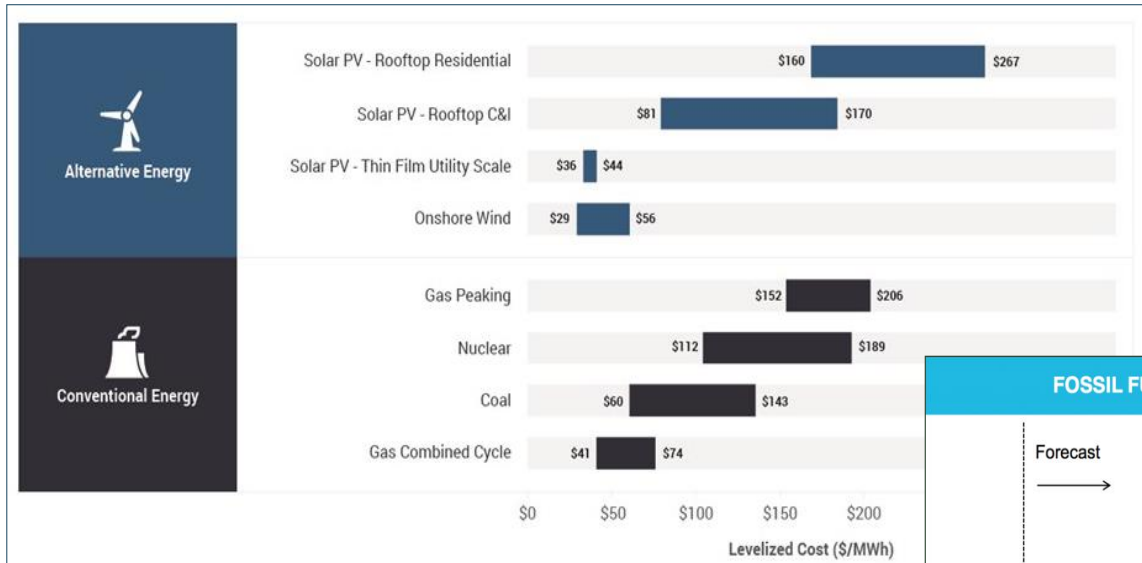
No. 1 Economic Growth Sector

Low-carbon Economy Opportunity



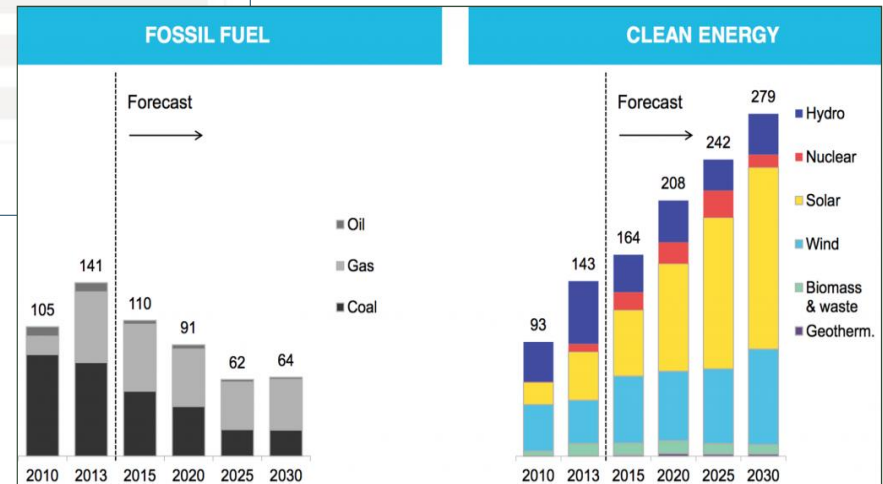
Is 100% clean energy affordable?

Conventional v. Clean Energy Costs



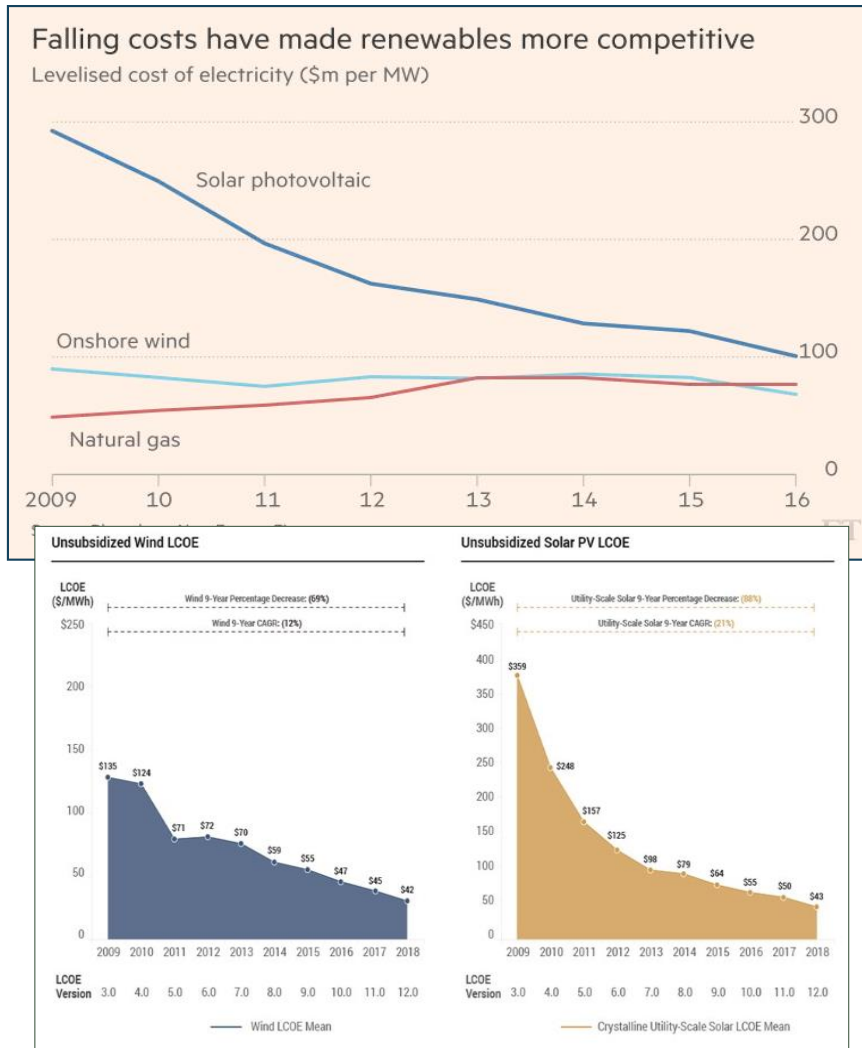
“Wind is the cheapest energy of all, and utility-scale solar is competitive with the cheapest natural gas.”

Source: Lazard’s Levelized Cost of Energy and Levelized Cost of Storage, Version 12.0



Source: Timi Puiu, How much renewable energy does the world use? AME Science, (June 26, 2018)

Clean Energy Costs – Solar & Wind



“Everyone, all over the planet, has to go to zero emissions by 2050, so we can talk about whether we should go to fifty percent, or forty, but let’s make sure we are talking about the same big picture. Until you adopt that reality, you’re stuck talking about the fact that solar might cost two cents more.”

Dr. Wesley Herche, Arizona State University,

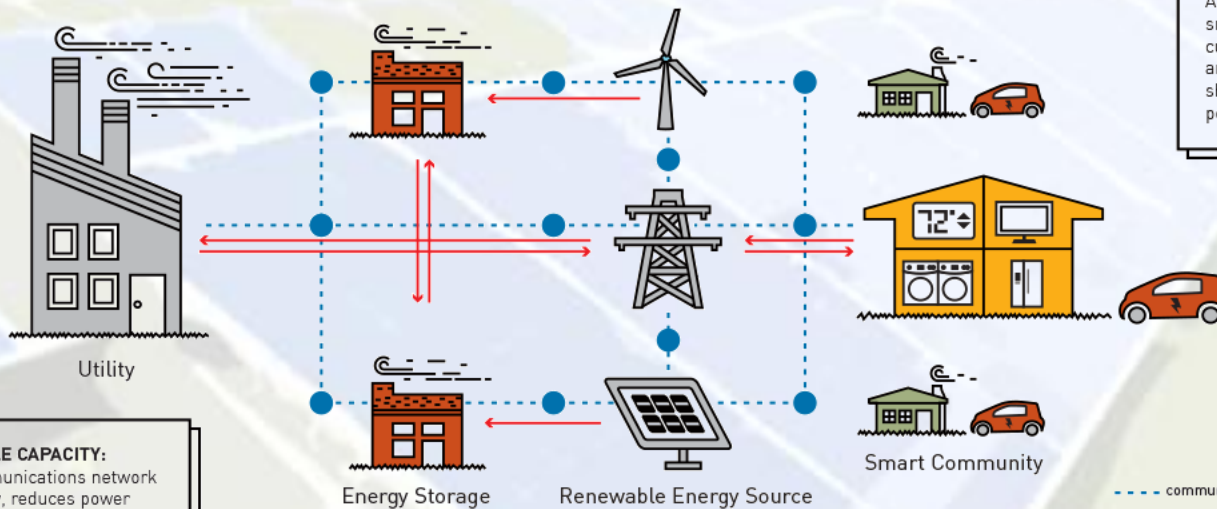
Source: Lazard’s Levelized Cost of Energy and Levelized Cost of Storage, Version 12.0

Modernizing the Electric Grid

GRID MODERNIZATION

INSTANTANEOUS RESPONSE AND INTEGRATION: The electricity grid joins the digital age with fast, reliable and secure communications that enable automated, optimized grid management. Efficiency and speed will drive down rates.

CUSTOMER ENGAGEMENT: An integrated grid with smart meters gives customers the information and incentives they need to shift their energy use from peak to non-peak times.



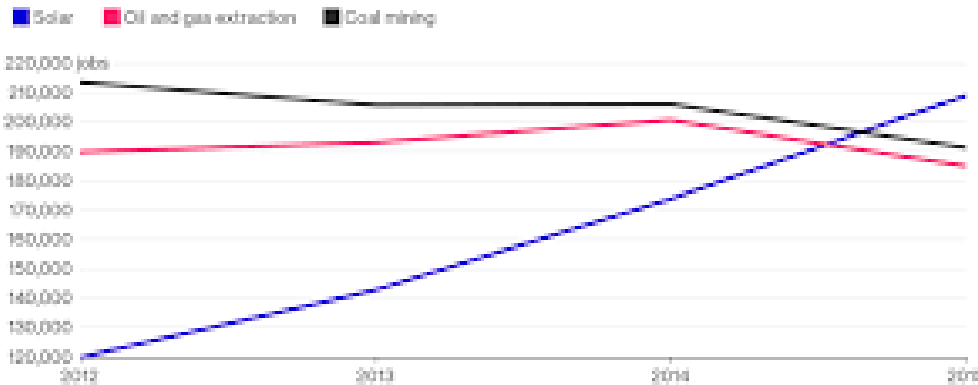
MORE RENEWABLE CAPACITY: A converged communications network improves reliability, reduces power outages, and increases quality while balancing demand.

Source: Hawaii State Energy Office, <http://energy.hawaii.gov/renewable-energy/grid-modernization>

Jobs in Clean Energy

There Are More Jobs in Solar than Oil and Gas, Coal Extraction in the U.S.

Employment grew 8 percent in solar and slumped 18 percent in upstream oil and gas and support services



Sources: International Renewable Energy Agency, U.S. Bureau of Statistics

Bloomberg

The transition to clean energy should not be viewed as a burden to be overcome but, rather, an extraordinary job creation opportunity for the United States.

Representative Brad Schneider, IL

million of spending

	Direct jobs	Indirect jobs	Induced jobs	Total jobs
Oil & natural gas	0.8	2.9	2.3	5.2
Coal	1.9	3.0	3.9	6.9
Building retrofits	7.0	4.9	11.8	16.7
Mass transit/freight rail	11.0	4.9	17.4	22.3
Smart grid	4.3	4.6	7.9	12.5
Wind	4.6	4.9	8.4	13.3
Solar	5.4	4.4	9.3	13.7
Biomass	7.4	5.0	12.4	17.4

Source: Katz, G. How many jobs does clean energy create? (Dec. 5, 2016). <https://www.greenbiz.com/article/how-many-jobs-does-clean-energy-create>

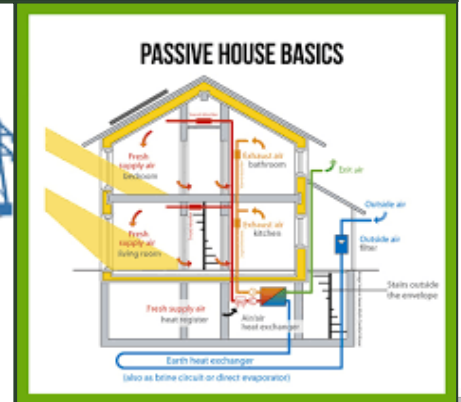
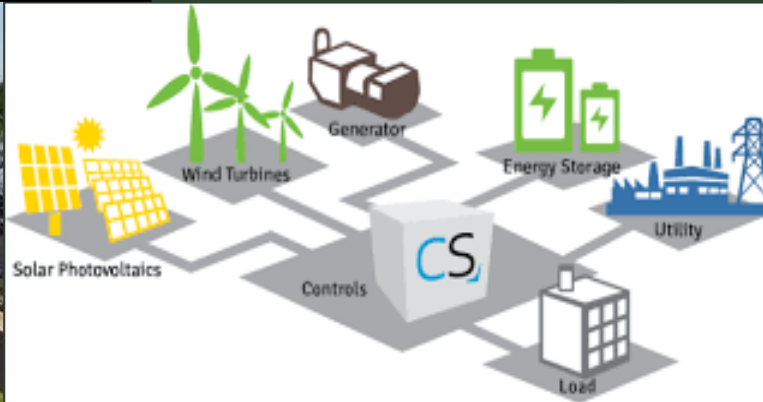
Equity in Clean Energy



*MOST AFFECTED
BY AIR POLLUTION:
Elderly, children, infants,
lower income & minority
communities & those with
respiratory illnesses
in urban areas*

“Together, these new technologies, markets, and rules can enable a more democratic electricity grid.”

Is 100% clean energy feasible?



How would it be financed?

Innovative and alternative financing methods have been used successfully

a fund or bonding for municipal building energy efficiency (EE) and renewable energy (RE) upgrades

a green loans program and/or revolving loan fund for EE and RE upgrades – especially for low income – to be paid back through the energy cost savings

financial incentives and/or a local tax credit to stimulate the necessary participation by companies and private individuals

Creative and fun mechanisms have also been used successfully

a Clean Energy Jamboree w/ local or national big name bands

a Local Restaurants Challenge where a small percentage of proceeds on a given day or week is allocated to clean energy

crowd-source funding for clean energy

How do we make this transition?



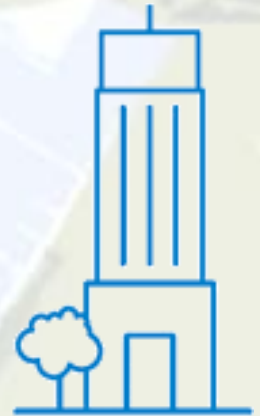
Humana



LouisvilleKy.gov



lcan



KENTUCKIANA WORKS



AFFORDABLE HOUSING

UNIVERSITY OF LOUISVILLE



Next Steps (Be it resolved...)

- ❑ Adopt the **100% Clean Energy Resolution for Louisville**
- ❑ Include the Resolution goals in the city's **Climate Action Plan**
- ❑ **Prioritize public participation** in the planning, decision-making, and implementation—a Clean Energy Working Group
- ❑ **Set binding** targets, interim goals and milestones to measure progress
- ❑ **Establish policies, staffing, and funding** for projects
- ❑ Require Metro Louisville include clean energy generation and/or conservation and efficiency features in their **RFP/Bids**.
- ❑ Revise all **building codes** for new construction and upgrades to require energy efficiency, conservation, and renewable energy

Next Steps (2)

- ❑ Prioritize energy resources and programs that **benefit low-income residents and create more equity** in energy use, rates and jobs in the community
- ❑ Commit to **no new fossil fuels infrastructure**
- ❑ **Investigate CCA purchasing** (Community Choice Aggregate) to bring down costs
- ❑ Continue to use **other sustainability strategies to cut demand**, e.g., planting trees, white roofs to cut heat island effect, etc.
- ❑ Develop a **system to catalogue progress** and projects in city operations and community-wide
- ❑ **Public education** will also be key

Setting a new course for Louisville



Charting a course to a 100% clean energy future will provide for our health, safety, and prosperity.