RESOLUTION NO. CC 02-20-17-04

A RESOLUTION OF THE COMMON COUNCIL OF THE CITY OF CARMEL, INDIANA, REGARDING CLIMATE RESILIENCE & RECOVERY

Synopsis: Resolution to reduce carbon emissions, increase energy efficiency and renewable energy use, in order to create a climate change-resilient City of Carmel that will protect the children and grandchildren of this community.

WHEREAS, the average temperature trend analyses from NASA Goddard Institute for Space Studies Surface Temperature Analysis show significant average temperature rise (for a list of references and citations, please see Exhibit A, which is attached hereto and incorporated herein by this reference); and

WHEREAS, the American Meteorological Society has declared there is unequivocal evidence of a changing climate since the 1950s;

WHEREAS, the American Meteorological Society has also determined that the dominant cause of the warming due primarily to the burning of fossil fuels;

WHEREAS, numerous respected agencies and organizations including the American Lung Association, the National Academy of Sciences, and the Dept. of Defense Quadrennial Defense Review have determined that climate change is a serious risk to life, a threat multiplier, and a threat to national security;

WHEREAS, localized risks to Hoosiers affecting human health, infrastructure and agriculture have included costly and dangerous extreme heat and drought conditions (2012), record-breaking rains and subsequent floods (2015), and overall chaotic weather extremes;

WHEREAS, in 2008, 82 of Indiana's 92 counties were declared Presidential disaster areas due to winter weather, severe storms, and flooding, and incurred over $1.9 billion in damage to public infrastructure, housing and agriculture;

WHEREAS, the Purdue Climate Change Research Center has determined that under continued business-as-usual "no action" carbon emissions, the Midwest should expect increased risks to public health, infrastructure and agriculture due to increased heat wave intensity and frequency, more extreme droughts, increased heavy rain events and flooding, decreasing agricultural yield and degraded air and water quality;

WHEREAS, a shift to clean renewable energy is inevitable due to the finite nature of non-renewable fossil resources;

WHEREAS, by increasing the efficiency of our buildings, vehicles, and electricity, our Community will save money, conserve energy, reduce waste, reduce pollution, and promote jobs in the clean energy sector;

WHEREAS, the effects of a healthier environment will substantially reduce health costs, especially for those suffering from asthma and emphysema and other lung illness associated with poor air quality;

WHEREAS, various economic analyses have shown that it is possible to introduce climate mitigation at a low cost, and the benefits outweigh costs;

WHEREAS, investment in energy independence from foreign oil will improve national security and reduce military expenses which could be used for domestic needs, such as education, infrastructure, and efforts to build resilient communities;

WHEREAS, the greatest burden resulting from an inadequate response to address climate change will be carried by the youngest generation, and all who follow;

WHEREAS, the risks from an inadequate response are potentially devastating, and are projected to include economic and environmental disruption, accelerated species extinction rates, rising sea levels, and a dramatic increase in refugees from climate impacted lands;

WHEREAS, averting the worst impacts of climate change will require reducing carbon emissions by at least 80% by 2050; and

WHEREAS, a local individualized climate plan will allow Carmel to continue to show leadership in improving the quality of life for its citizens.

NOW, THEREFORE, BE IT RESOLVED by the Common Council of the City of Carmel, Indiana, as follows:

1) The City of Carmel will strive to reduce its carbon emissions from 2016 levels in a manner that is prudent, properly funded, well documented, and approved by the Carmel Common Council.

2) In order to establish a plan to achieve Objective #1 of this Resolution, the City of Carmel will create a climate action plan that includes obtaining a baseline measurement of citywide emissions, establishing proper measures to ensure the plan is being implemented, and

incorporating energy efficiency and renewable energy standards where possible.

3) The City of Carmel may appoint a commission comprised of business leaders, faith leaders, youth leaders, and community leaders to monitor progress and consult with elected officials.

SO RESOLVED by the Common Council of the City of Carmel, Indiana this _____day of _____, 2017 by a vote of _____ ayes and _____nays.

COMMON COUNCIL FOR THE CITY OF CARMEL

_____ _____
Sue Finkam, President H. Bruce Kimball

_____ _____
Laura D. Campbell Kevin D. Rider

_____ _____
Ronald E. Carter Jeff Worrell

_____
Anthony Green

ATTEST:
_____
Christine S. Pauley, Clerk-Treasurer

Presented by me to the Mayor of the City of Carmel, Indiana this ____ day of _____ 2017, at _____ __.M.

_____
Christine S. Pauley, Clerk-Treasurer

Approved by me, Mayor of the City of Carmel, Indiana, this _____ day of _____ 2017, at _____ __.M.

_____
James Brainard, Mayor

ATTEST:
_____
Christine S. Pauley, Clerk-Treasurer

EXHIBIT A
CITATIONS & REFERENCES

NASA: "Global Climate Change"; climate.nasa.gov/evidence

American Meteorological Society: https://www.ametsoc.org/ams/index.cfm/about-ams/ams-statements/statements-of-the-ams-in-force/climate-change/

National Academy of Sciences: https://www.koshland-science-museum.org/explore-the-science/earth-lab/impacts

Department of Defense: http://archive.defense.gov/pubs/2014_Quadrennial_Defense_Review.pdf

American Lung Association: http://www.lung.org/our-initiatives/healthy-air/outdoor/climate-change/

Indiana State Climate Office: July 2012 Climate Summary, http://iclimate.org/summary/2012-07.pdf
"July maximum temperatures exceeded 100°F or more on about 7 days across the state and peaked at or above 105°F on 2 days in two heat waves. The drought intensified statewide this month, reaching exceptional status in a quarter of Indiana. More than half the state now qualifies as a federal drought disaster area. Estimates of crop losses to Indiana now exceed $1 billion."

Indiana Public Media, Dan Goldblatt: 2012 Was Second Warmest Year On Record In Indiana
http://indianapublicmedia.org/news/2012-warmest-year-record-42701/
"In 2012, Indiana's average temperature was more than three degrees higher than average, making it the second hottest year since 1871, when record-keeping began."

NOAA National Centers for Environmental Information:

a. *State of the Climate: Drought for Annual 2012*, http://www.ncdc.noaa.gov/sotc/drought/201213
"Six states in the Plains and Midwest (Arkansas, Indiana, Iowa, Kansas, Missouri, Nebraska) ranked in the top ten driest category for January-November"

b. *Billion Dollar Weather and Climate Disasters,* http://www.ncdc.noaa.gov/billions/events
"The 2012 drought is the most extensive drought to affect the U.S. since the 1930s. Moderate to extreme drought conditions affected more than half the country for a majority of 2012. The following states were affected: CA, NV, ID, MT, WY, UT, CO, AZ, NM, TX, ND, SD, NE, KS, OK, AR, MO, IA, MN, IL, IN, GA. Costly drought impacts occurred across the central agriculture states resulting in widespread harvest failure for corn, sorghum and soybean crops, among others. The associated summer heatwave also caused 123 direct deaths, but an estimate of the excess mortality due to heat stress is still unknown."

State Climate Office: Indiana rains set record for month of June
https://www.purdue.edu/newsroom/releases/2015/Q3/state-climate-office-indiana-rains-set-record-for-month-of-june.html
"Indiana set a record for rainfall in the month of June, with a state average of 9.03 inches, the Indiana State Climate Office said Wednesday (July 1). June also was the fourth-wettest of any month on record since 1895.The rainfall surpassed the previous June record of 8.13 inches set in 1958. The climate office, based at Purdue University, said nearly all parts of Indiana received above-normal rainfall. Normal rainfall ranges from 4.1 inches to 4.3 inches across the state."

US Department of Housing and Urban Development, Federal Register 2009, Gov. Mitch Daniels, Indiana Office of Community and Rural Affairs, Indiana Housing and Community Development Dept.: State of Indiana Amendment #5 to Action Plan for CDGB Supplemental Disaster Recover Funds

http://www.in.gov/ocra/files/CDBG_Disaster_Appropriation_2_Action_Plan_Amendment_5_Rev_FINAL.pdf

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> The 2008 disasters in Indiana have been among the worst in our state's history. 82 of Indiana's 92 counties were declared as Presidential disaster areas between the three disaster periods (DR-1740, DR-1766 and DR-1795).

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> The chart below depicts the best possible estimate of the financial impact of all the 2008 disasters to the state of Indiana. Based on these estimates, the state has been subject to over $1.9 billion in damage to public infrastructure, housing and farmland.

Purdue University: https://www.purdue.edu/discoverypark/climate/resources/docs/ClimateImpactsIndiana.pdf; Also, **National Climate Assessment:** http://nca2014.globalchange.gov/report#section-1946

National Geographic Society: Non-Renewable Energy.
http://nationalgeographic.org/encyclopedia/non-renewable-energy/

Stanford Report: Stanford scientist unveils 50-state plan to transform U.S. to renewable energy, http://news.stanford.edu/news/2014/february/fifty-states-renewables-022414.html
"Stanford University scientist Mark Jacobson has developed a 50-state roadmap for transforming the United States from dependence on fossil fuels to 100 percent renewable energy by 2050.... The motivation for the 50-state plan, he said, is to address the negative impacts on climate and human health from widespread use of coal, oil and natural gas. Replacing these fossil fuels with clean technologies would significantly reduce carbon dioxide emissions that contribute to global warming and spare the lives of an estimated 59,000 Americans who die from exposure to air pollution annually, he said."

Union of Concerned Scientists: Benefits of Renewable Energy Use
http://www.ucsusa.org/clean_energy/our-energy-choices/renewable-energy/public-benefits-of-renewable.html#.V5ZOjMtTH5o
"Little to No Global Warming Emissions... Improved Public Health and Environmental Quality... A Vast and Inexhaustible Energy Supply... Jobs and Other Economic Benefits... Stable Energy Prices... A More Reliable and Resilient Energy System"

McKinsey & Company:

a. *Jon Creyts, Hannah Choi Granade, and Kenneth J. Ostrowski: US Energy Savings Opportunities and Challenges,* http://www.mckinsey.com/industries/electric-power-and-natural-gas/our-insights/us-energy-savings-opportunities-and-challenges "There is great potential to reduce energy consumption and minimize its total cost by using existing technologies—and without changing the everyday habits of consumers...For executives, this shift could bring not only new challenges, including stringent regulations, but also new business opportunities. And for society as a whole, the potential savings are huge: more than $1 trillion in the United States alone."
b. *Hannah Choi Granade, Jon Creyts, Anton Derkach, Phillip Farese, Scott Nyquist, and Kenneth J. Ostrowski: Unlocking Energy Efficiency in the U.S. Economy*
"Energy Efficiency offers a vast, low cost energy resource for the U.S. economy - but only if the nation can craft a comprehensive and innovative approach to unlock it."

Climate Central, Bobby Magill: Better Health a Key Benefit of Renewables, Study Says
http://www.climatecentral.org/news/renewables-benefit-climate-public-health-19397

"Researchers from Harvard University, in a bid to show the monetary value of clean energy projects in terms of improved public health, have found that energy efficiency measures and low-carbon energy sources can save a region between $5.7 million and $210 million annually..."

U.S. Senate Committee on Foreign Relations: The Hidden Cost of Oil
https://www.gpo.gov/fdsys/pkg/CHRG-109shrg34739/html/CHRG-109shrg34739.htm

Opening Remarks - RICHARD G. LUGAR, Senator from Indiana, Committee Chairman
"...there is not a full appreciation of the hidden costs of oil dependence to our economy, our national security, our environment, and our broader international goals...if we blithely ignore our dependence on foreign oil, we are inviting an economic and national security disaster....Our goals must be to mitigate the short-term costs of our dependence on oil while pursuing energy alternatives that would reduce the international leverage of petro-superpowers, improve environmental quality, cushion potential oil price shocks, stimulate new high-tech energy industries, and ground the American economy on energy sources that will neither run out nor be cut off by a foreign supplier... reliance on fossil fuels contributes to environmental problems, including climate change. In the long run, this could bring drought, famine, disease, and mass migration, all of which could lead to conflict and instability...Some costs, particularly those affecting the environment and public health, are attributable to oil no matter its source; others, such as costs of military resources dedicated to preserving oil supplies, stem from our dependence on oil imports. But each dollar we spend on securing oil fields, borrowing money to pay for oil imports, or cleaning up an oil spill is an opportunity missed to invest in a sustainable energy future...As the U.S. Government and American business consider investments in energy alternatives, we must be able to compare the costs of these investments with the entire cost of oil. Public acknowledgment of the billions of dollars we spend to support what the President has called our, "oil addiction," would shed new light on investment.

Testimony - MILTON R. COPULOS, PRESIDENT, NATIONAL DEFENSE COUNCIL FOUNDATION, ALEXANDRIA, VA "...the hidden cost in 2005 for our oil profligacy came to $779.5 billion...The supply disruptions of the 1970s cost the U.S. economy between $2.3 trillion and $2.5 trillion. Today, such an event could carry a price tag as high as $8 trillion"

Testimony - DR. GARY W. YOHE, JOHN E. ANDRUS PROFESSOR OF ECONOMICS, WESLEYAN UNIVERSITY, MIDDLETOWN, CT "...if the global mean temperature were to increase another 2 degrees from 2000 levels, that there would be a 50-percent chance of the collapse of the thermohaline circulation, otherwise known as the Gulf Stream...if you do not include the environmental costs of petroleum, the climate costs of petroleum, in your evaluations of what it really costs the planet for you to burn a barrel of oil, for whatever purpose, you systematically undervalue conservation projects--programs, plans, policies--projects that would look for alternative energy sources, things that are more sustainable...Systematically, as well, you overvalue new sources of oil, you overvalue new sources of consumption of oil, simply because the energy required to drive it is not priced appropriately.... It's actually really less important what number starts the policy now. It is more important, and absolutely critical, that it increase over time at a predictable rate..."

Current in Carmel, James Feichtner: Ballard, Brainard Speak on U.S. Oil Dependency
http://currentincarmel.com/ballard-brainard-speak-on-u-s-oil-dependency
"... Ballard spoke to residents and emphasized that the U.S. involvement in Middle Eastern affairs related directly to its dependence on oil. "My basic question is why are we in the Middle East?," Ballard said. "That's a good basic question to ask. Forty years we've been doing this since the Middle Eastern countries figured out, because of the oil embargos of 1973, they could affect our quality of life. That's why we are there."

National Oceanic and Atmospheric Administration: Sea level rise
http://oceanservice.noaa.gov/facts/sealevel.html

United Nations High Commissioner for Refugees: Refugees
http://www.unhcr.org/en-us/climate-change-and-disasters.html

UNHCR report on climate change, 2015
http://www.unhcr.org/en-us/protection/environment/540854f49/unhcr-climate-change-overview.html?query=projected refugees climate change
"...UN High Commissioner for Refugees Antonio Guterres has staunchly and consistently advocated for States to take the issue of climate change seriously and expressed his view that this is a megatrend that will compound others, such as food and water insecurity and competition over resources..."

Internal Displacement Monitoring Center
http://www.unhcr.org/en-us/protection/environment/540854f49/unhcr-climate-change-overview.html?query=projected refugees climate change
"...Since 2008, an average of 26.4 million people per year have been displaced from their homes by disasters brought on by natural hazards. This is the equivalent to one person being displaced every second. The number and scale of huge disasters creates significant fluctuation from year to year in the total number of people displaced, while the trend over decades is on the rise."

Carbon Neutral Cities Alliance.
http://usdn.org/public/page/13/CNCA
"Cities striving for carbon neutrality recognize that averting the worst impacts of climate change will require cutting GHG emissions by at least 80% by 2050."

The National Academies of Science, Engineering and Medicine, **Climate Stabilization Targets**
https://nas-sites.org/americasclimatechoices/other-reports-on-climate-change/climate-stabilization-targets/
"Emissions of carbon dioxide from the burning of fossil fuels have ushered in a new epoch where human activities will largely determine the evolution of Earth's climate. Because carbon dioxide in the atmosphere is long lived, emissions reductions choices made today matter in determining impacts experienced not just over the next few decades, but in the coming centuries and millennia. Policy choices can be informed by recent advances in climate science that quantify the relationships between increases in carbon dioxide and global warming, related climate changes, and resulting impacts, such as changes in streamflow, wildfires, crop productivity, extreme hot summers, and sea level rise.

Union of Concerned Scientists, Avoiding Dangerous Climate Change
http://www.usclimatenetwork.org/resource-database/WEB%20emissions-target-fact-sheet.pdf
Given our aggressive assumptions about reductions by other nations and the fact that 450 ppm CO2eq represents the upper limit needed to avoid a potentially dangerous temperature increase, the United States should reduce its emissions at least 80 percent below 2000 levels by 2050

US Global Change Research Program, Emissions Reductions and Carbon Dioxide Concentrations
http://www.globalchange.gov/browse/multimedia/%EF%BF%BCemissions-reductions-and-carbon-dioxide-concentrations
To reduce the changes occurring in climate, we would need to stabilize atmospheric levels of carbon dioxide, not simply stabilize current emission levels of carbon dioxide. Just stabilizing emissions still leads to increasing amounts of carbon dioxide in the atmosphere, because emissions are greater than the sinks that remove it (blue lines). To stabilize levels of atmospheric carbon dioxide, emissions would need to be reduced significantly, on the order of 80% or more compared to the present day (green lines). The lower graph shows how carbon dioxide concentrations would be expected to evolve depending upon emissions for one illustrative case, but this applies for any chosen target

Climate Change 2014 Synthesis Report Summary for Policymakers
http://www.ipcc.ch/pdf/assessment-report/ar5/syr/AR5_SYR_FINAL_SPM.pdf
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"these scenarios are characterized by concentrations below 430 ppm CO_2-eq by 2100 and 2050 emission reduction between 70% and 95% below 2010

Additional Resources

I. Model Cities for Carbon Neutrality
   A. Copenhagen - http://www.energycommunity.org/documents/copenhagen.pdf
   B. Melbourne - http://www.melbourne.vic.gov.au/AboutCouncil/PlansandPublications/strategies/Pages/Environmentalpolicies.aspx
   C. Fort Collins, CO - http://www.fcgov.com/environmentalservices/pdf/cap-framework-2015.pdf

II. For more cities with carbon reduction plans, see C40 Cities (http://www.c40.org/cities) and the Carbon Neutral Cities Alliance (http://usdn.org/public/page/13/CNCA).

Carbon Brief, Simon Evans:
https://www.carbonbrief.org/briefing-the-15-options-for-net-zero-emissions-in-the-paris-climate-text
"Many of the world's nations want this year's Paris climate talks to aim for net-zero emissions, so that the world becomes climate neutral later this century."

Only Zero Carbon:
http://www.onlyzerocarbon.org/definition.html

Carbon neutral and net zero as defined by UNEP (GAP report 2014):
"Global carbon neutrality means that, globally, anthropogenic carbon dioxide emissions are net zero. Net zero implies that some remaining carbon dioxide emissions could be compensated by the same amount of carbon dioxide uptake (negative emissions), as long as the net input of carbon dioxide to the atmosphere due to human activities is zero."

Carbon Neutral Cities Alliance:
http://usdn.org/public/page/13/CNCA
A collaboration of international cities committed to achieving aggressive long-term carbon reduction goals.

Climate Neutral Cities:
How to make cities less energy- and carbon-intensive and more resilient to climatic challenges
https://www.unece.org/fileadmin/DAM/hlm/documents/Publications/climate.neutral.cities_e.pdf
Cities are responsible for a significant part of GHG emissions – both directly as generators of such emissions and indirectly as end-users of fossil fuel based energies and other goods and services, the production of which generates emissions elsewhere. Cities should, therefore, be considered as strategic vehicles for climate change mitigation.

David Suzuki Foundation: Using Carbon Offsets to Neutralize Your Emissions
http://www.davidsuzuki.org/what-you-can-do/reduce-your-carbon-footprint/go-carbon-neutral/
"Here's how it works: if you add polluting emissions to the atmosphere, you can effectively subtract them by purchasing carbon offsets. Carbon offsets are simply credits for emission reductions achieved by projects such as wind farms, solar installations, or energy efficiency retrofits. You can purchase these credits and apply them to your own emissions to reduce your net climate impact."

Ecoaffect: New Lancet Report - Climate Change Is Biggest Health Threat and Greatest Health Opportunity of 21st Century
http://ecoaffect.org/2015/06/23/new-lancet-report-climate-change-is-biggest-health-threat-and-greatest-health-opportunity-of-21st-century/

SustainableBusiness.com:
A. World's Largest Cities Launch Carbon Neutral Alliance
   http://www.sustainablebusiness.com/index.cfm/go/news.display/id/26234 *Cities include:* New York

City, Boston, San Francisco, Seattle, Portland, OR, Boulder, Minneapolis, Wash DC, Vancouver, London, Berlin, Stockholm, Copenhagen, Oslo, Berlin, Melbourne, Sydney, Yokohama

B. In Unanimous Vote, Vancouver Moves Toward 100% Renewable Energy
http://www.sustainablebusiness.com/index.cfm/go/news.display/id/26231 "In 2010, Vancouver passed its Greenest City Action Plan - to become the world's greenest city by 2020."