



## **OPPDP BOARD OF DIRECTORS**

### **BOARD MEETING MINUTES**

**September 19, 2024**

The regular meeting of the Board of Directors of the Omaha Public Power District ("OPPDP" or "District") was held on Thursday, September 19 at 5:00 p.m. at the Omaha Douglas Civic Center, 1819 Farnam Street, 2<sup>nd</sup> Floor Legislative Chamber, Omaha, Nebraska and via WebEx audio and video conference.

Present in person at the Civic Center were Directors A. E. Bogner, M. J. Cavanaugh, M. R. Core, S. E. Howard, J. M. Mollhoff, C. C. Moody, M. G. Spurgeon and E. H. Williams. Also present in person were L. J. Fernandez, President and Chief Executive Officer, Messrs. S. M. Bruckner and T. F. Meyerson of the Fraser Stryker law firm, General Counsel for the District, E. H. Lane, Sr. Board Operations Specialist, and other members of the OPPD Board meeting logistics support staff. Chair E. H. Williams presided and E. H. Lane recorded the minutes. Members of the executive leadership team present in person included J. M. Bishop, K. W. Brown, S. M. Focht, G. M. Langel, T. D. McAreavey, M. V. Purnell and B. A. Underwood. L. A. Olson joined via WebEx.

#### ***Board Agenda Item 1: Chair Opening Statement***

Chair Williams gave a brief opening statement, including reminders for using the WebEx audio and video conferencing platform.

#### ***Board Agenda Item 2: Safety Briefing***

Josh Clark, Manager Protective Services, provided physical safety reminders. L. J. Fernandez, President and CEO, provided psychological safety reminders, including current safety focus reminders about: (i) Seasonal Safety; (ii) High Energy Hazards & Direct Controls; and (iii) Emergency Preparedness.

#### ***Board Agenda Item 3: Guidelines for Participation***

Chair Williams then presented the guidelines for the conduct of the meeting and instructions on the public comment process in the room and using WebEx audio and video conferencing features.

#### ***Board Agenda Item 4: Roll Call***

Ms. Lane took roll call of the Board. All members were present in person.

#### ***Board Agenda Item 5: Announcement regarding public notice of meeting***

Ms. Lane read the following:

*"Notice of the time and place of this meeting was publicized by notifying the area news media; by publicizing same in the Omaha World Herald, OPPD Outlets*

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*newsletter, oppd.com and social media; by displaying such notice on the Arcade Level of Energy Plaza; and by e-mailing such notice to each of the District's Directors on September 13, 2024.*

*A copy of the proposed agenda for this meeting has been maintained, on a current basis, and is readily available for public inspection in the office of the District's Corporate Secretary.*

*Additionally, a copy of the Open Meetings Act is available for inspection on oppd.com and in this meeting room."*

**Board Consent Action Items:**

6. Approval of the July 2024 Financial Report, August 2024 Meeting Minutes, August 2024 Board Governance Workshop Minutes and the September 19, 2024 Agenda
7. SD-10: Ethics Monitoring Report – Resolution No. 6658
8. 2025 Board Meeting Schedule – Resolution No. 6659
9. Acquisition of Land Rights for Utility Operations Infrastructure Projects - Q St. Widening from 192nd St. to 204th St. – Resolution No. 6660
10. FERC Transmission Tariff Formula Change – Resolution No. 6661

It was moved and seconded that the Board approve the consent action items.

Chair Williams noted the Board discussed the action items during the All Committees meeting held on Tuesday, September 17, 2024.

Chair Williams then asked for public comment. There were no comments from the public in attendance at the meeting.

Chair Williams then asked for public comment on WebEx. There were no comments.

Thereafter, the vote was recorded as follows: Bogner – Yes; Cavanaugh – Yes; Core – Yes; Howard – Yes; Mollhoff – Yes; Moody – Yes; Spurgeon – Yes; Williams – Yes. The motion carried (8-0).

**Board Discussion Action Items**

11. SD-9: Integrated System Planning Monitoring Report – Resolution No. 6662

Director Moody moved to approve the discussion action item, and it was seconded by Director Mollhoff. Chair Williams asked for comments from the Board. There were comments of appreciation by Director Moody, Director Core, Director Mollhoff, Director Spurgeon, Director Cavanaugh and Director Williams.

Chair Williams then asked for public comment. There was one comment from the public in attendance at the meeting.

David Begley, 4611 S. 96<sup>th</sup> Street, Omaha, provided comments on the SD-9 Monitoring Report and supply and demand and presented materials to the board which are attached to these minutes.

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Chair Williams asked for comments from members of the public on WebEx. There was one comment.

John Pollack, 1412 N. 35<sup>th</sup> Street, Omaha, provided comments on the SD-9 Monitoring Report and renewable energy.

Chair Williams asked for comments from the Board. There were comments made by Director Mollhoff and Director Williams.

Thereafter, the vote was recorded as follows: Bogner – Yes; Cavanaugh – Yes; Core – Yes; Howard – Yes; Mollhoff – Yes; Moody – Yes; Spurgeon – Yes; Williams – Yes. The motion carried (8-0).

***Board Agenda Item 9: President's Report***

President Fernandez next presented the following information:

- August 2024 Baseload Generation
- August 2024 Balancing Generation
- August 2024 Renewables
- Update on New All Time Peak
- Honor Our Community
- Volunteering
- In Memoriam – Arthur Pakiser

***Board Agenda Item 10: Opportunity for comment on other items of District Business***

Chair Williams asked for comments from the public in the room on other items of District business. There were three comments.

David Begley, 4611 S. 96<sup>th</sup> Street, Omaha, provided comments on net zero goals, and presented materials to the board which are attached to these minutes.

C. Peck, LaVista, provided comments of appreciation for OPPD.

Connie Remkus, 5027 S. 178<sup>th</sup> St., Omaha, provided comments on the July storm outage and restoration.

Chair Williams asked for comments from members of the public on WebEx. There were four comments.

Ken Winston, representing the Nebraska Interfaith Power & Light and the Nebraska Sierra Club provided comments on climate action change and SD-7 revisions.

David Corbin, 1002 N. 49<sup>th</sup> St, representing Missouri Valley Sierra Club, provided comments on SD-7 and interim metrics.


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John Pollack, 1412 N. 35<sup>th</sup> Street, Omaha, provided a weather update.

Ryan Wishart, 912 N. 49<sup>th</sup> St, provided comments on renewable battery storage, data centers and SD-7 revisions.


There were no additional comments from the public in attendance at the meeting or via WebEx.

There being no further business, the meeting adjourned at 6:05 p.m.

Signed by:  
  
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McKell V. Purnell  
Vice President – Human Capital  
and Assistant Secretary

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Erin H. Lane  
Sr. Board Operations Specialist

“If power is not dispatchable, then it’s not reliable.”

A top electric utility expert

Prepared and submitted by customer-owner David D. Begley, 4611 South 96<sup>th</sup> Street, Omaha.

## **RELIABILITY**

North Central Rural Public Power District serves Knox County. In the summer at night, there's not enough power to run the center pivots. Pivots get shut down from 10 pm to Midnight

Why?

The wind stops blowing at night. Wind is intermittent. Not reliable

\*\*\*\*

“A business model based on a fad is not wise.”

Levi, the Amish farmer in Knox County

## **RELIABILITY**

Transmission is golden.

\$1.5m per mile to build transmission.

That's why OPPD wants Cass County Solar and K-Junction Solar. Transmission lines built or to be built in both counties.

What's the load on the big transmission line out of Washington County these days?

“I expect we will have 1,000 or 2,000 or more data centers -- Oracle cloud data centers around the world....”

The largest Oracle data center consumes 800 MW of electricity and future ones will consume 1 gigawatt.

Comments of Oracle Chairman, Larry Ellison, conference call of September 9, 2024.

## **OPPD's Arbitrage Opportunity**

Per your own consultant and many others in the industry, there is a projection of increased demand for electricity in the United States. The amount of the projected increase varies, but it is large. That's the demand side.

The supply side is constrained because nearly all utilities are pursuing a net zero carbon; either mandated by law or by policy.

Net zero constrains on both price and amount of reliable electricity.

On a total cost basis, solar and wind are the most expensive forms of energy generation.

Nebraska has imposed a statutory duty on OPPD to produce only low cost and reliable power.

That means that the bulk of OPPD's power generation should be from low cost, reliable and dispatchable oil, coal, nuclear and natgas power rather than expensive and unreliable solar and wind.

There is a **direct correlation** between the amount of solar and wind in the grid and prices. That's why Germany's rates are 3x the US average.

Per Teddi Morgan (address unknown), California had no blackouts in July. But what are the rates for PG&E compared to OPPD?

**PG&E has 24% of its grid in solar and wind.**



## **Solution**

Build a very large natural gas power plant in Washington or Burt counties preferably served by two different pipelines.

OPPD already owns the high-power lines between Ft. Calhoun Station and Omaha.

As other utilities continue to raise rates, OPPD can attract more data centers, crypto miners and other businesses that have a demand for lots of electricity. OPPD will be the low-cost provider of a commodity.

One prospect would be Nucor, a steel manufacturer, with a plant on Norfolk. OPPD can also export electricity to the grid as other utilities become supply constrained.

## Result

OPPD grows revenues 2x to 3x. Omaha area experiences an economic boom.

The CEO and the VPs will all have earned a big pay raise and I will wholeheartedly support that.

Added bonus. Feature article in the *Harvard Business Review*.

Never forget that the carbon dioxide emissions of OPPD make absolutely no difference in light of the carbon dioxide emitted by China and India.

## **RESOLUTION NO. 66xx**

**WHEREAS**, OPPD's customer-owners experienced the largest outage in OPPD's history after the storm of July 31, 2024;

**WHEREAS**, thousands of OPPD customer-owners suffered hardship following the July 31, 2204 storm including spoiled food, lost income and lack of air conditioning;

**WHEREAS**, OPPD has admitted it failed its customer-owners due to lack of attention and spending on hardening OPPD's infrastructure;

**WHEREAS**, an investor-owned utility, CenterPoint, also experienced a massive storm outage this summer;

**WHEREAS**, CenterPoint has, in response to its failure, started the Greater Houston Resiliency Initiative;

**WHEREAS**, a critical part of OPPD's mission is to provide reliable power to its customer-owners;

**WHEREAS**, OPPD's Directors are elected by the public and are ostensibly accountable to voters;

**NOW, THEREFORE, BE IT RESOLVED** that the Board of Directors of Omaha Public Power District direct that the officers of OPPD produce within sixty days a Greater Omaha Resiliency Initiative which will include, *inter alia*, an action plan for system hardening, strategic undergrounding, installation of fiberglass poles and increasing its vegetation management and easement clearance workforce; provided, however, that any newly hired employees will be screened through OPPD's Diversity, Equity and Inclusion guidelines.

Prepared and submitted by customer-owner David D. Begley, 4611 South 96<sup>th</sup> Street, Omaha, NE.

# Net Zero Averted Temperature Increase

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June 11, 2024

## Abstract

Using feedback-free estimates of the warming by increased atmospheric carbon dioxide (CO<sub>2</sub>) and observed rates of increase, we estimate that if the United States (U.S.) eliminated net CO<sub>2</sub> emissions by the year 2050, this would avert a warming of 0.0084 °C (0.015 °F), which is below our ability to accurately measure. If the entire world forced net zero CO<sub>2</sub> emissions by the year 2050, a warming of only 0.070 °C (0.13 °F) would be averted. If one assumes that the warming is a factor of 4 larger because of positive feedbacks, as asserted by the Intergovernmental Panel on Climate Change (IPCC), the warming averted by a net zero U.S. policy would still be very small, 0.034 °C (0.061 °F). For worldwide net zero emissions by 2050 and the 4-times larger IPCC climate sensitivity, the averted warming would be 0.28 °C (0.50 °F).

# 1 Introduction

In this note, we show how to simply estimate the averted temperature increase  $\delta T$  that would result from achieving net zero carbon dioxide emissions in the United States (U.S.) or from worldwide net-zero policies. Straightforward calculations outlined below show that eliminating U.S. CO<sub>2</sub> emissions by the year 2050 would avert a temperature increase of

$$\delta T = 0.0084 \text{ }^\circ\text{C}, \quad (1)$$

less than a hundredth of a degree centigrade.

Computer models are not needed to estimate the averted temperature increase (1). It is given to high accuracy by the simple formula

$$\delta T = S \log_2 \left( \frac{C}{C'} \right), \quad (2)$$

where  $\log_2$  denotes the base-2 logarithm function.

In (2) the symbol  $S$  denotes the equilibrium temperature increase caused by a doubling of atmospheric CO<sub>2</sub> concentrations. We will assume a numerical value

$$S = 0.75 \text{ }^\circ\text{C}. \quad (3)$$

Because it is so hard to determine how much of the warming of the past two centuries has been from natural causes and how much is due to increasing concentrations of greenhouse gases, it is not possible to obtain a reliable estimate of  $S$  from observations. The value (3) is a straightforward, feedback-free estimate that comes from the basic physics of radiation transfer. For example, see p. 19 in the recent review of climate sensitivities [1]. The value (3) is almost the same as the estimate of Rasool and Schneider [2],  $S = 0.8 \text{ }^\circ\text{C}$  in the year 1971, before global-warming alarmism became fashionable.

In (2) the symbol  $C$  denotes the concentration of atmospheric CO<sub>2</sub> in the net-zero target year 2050 if the U.S. takes no measures to reduce emissions. The symbol  $C'$  is the concentration if the U.S. reduces its emissions to zero at that time. The U.S. fraction  $f_0$  of total world emissions CO<sub>2</sub> in the year 2024 is very nearly[3]

$$f_0 = 0.12, \quad (4)$$

12% or about 5 out of 40 billion metric tons of CO<sub>2</sub>. Most emissions now are from China and India. Therefore the concentration decrement,  $\delta C$ , if the U.S. reduces emissions to zero by the year 2050,

$$\delta C = C - C', \quad (5)$$

will be relatively small,

$$\frac{\delta C}{C} \ll 1. \quad (6)$$

We can use (6) to approximate (2) as

$$\begin{aligned}\delta T &= -S \log_2 \left( 1 - \frac{\delta C}{C} \right) \\ &\approx \frac{S \delta C}{\ln(2) C} \\ &\approx \frac{S f_0 R \Delta t}{2 \ln(2) (C_0 + R \Delta t)}.\end{aligned}\tag{7}$$

Before turning to the derivation of (7), which assumes the U.S. fraction of world emissions decreases steadily from  $f_0 = 0.12$  now to zero in the year 2050, we discuss the meanings of the symbols and we give representative values of them. The natural (base- $e$ ) logarithm of 2, which appears in (7), has the numerical value

$$\ln(2) = 0.6931.\tag{8}$$

The atmospheric concentration of CO<sub>2</sub> now (the middle of the year 2024) is [4]

$$C_0 = 427 \text{ ppm}.\tag{9}$$

The time remaining to the net zero target date of 2050 is

$$\Delta t = 25.5 \text{ year},\tag{10}$$

The current rate of increase of atmospheric concentrations of CO<sub>2</sub> is

$$R = 2.5 \text{ ppm year}^{-1}.\tag{11}$$

Substituting numerical values from (3), (4), (8), (9), (10) and (11) into the bottom line of (7) gives (1).

## 2 Details

If there were no reductions of the U.S. fraction of CO<sub>2</sub> emissions, the atmospheric concentration at the net zero target date would be

$$\begin{aligned}C &= C_0 + \Delta C \\ &= 490.75 \text{ ppm}.\end{aligned}\tag{12}$$

If the emission rate continues at the constant value  $R$  for the time  $\Delta t$  the concentration increment would be

$$\begin{aligned}\Delta C &= R \Delta t \\ &= 63.75 \text{ ppm}.\end{aligned}\tag{13}$$

We used (10) and (11) to write the bottom line of (13), and we used the bottom line of (13) with (9) to write the bottom line of (12). Because the radiative forcing of CO<sub>2</sub> is proportional

to the logarithm of the concentration, the temperature increment in the year 2050, caused by the concentration increment (13), would be

$$\begin{aligned}\Delta T &= S \log_2 \left( \frac{C}{C_0} \right) \\ &= 0.1506 \text{ }^\circ\text{C}.\end{aligned}\tag{14}$$

The numerical values of  $S$  from (3), of  $C_0$  from (9) and  $C$  from the bottom line of (12) were used to evaluate the bottom line of (14).

The proportionality of the temperature increment  $\Delta T$  to the logarithm of the concentration ratio  $C/C_0$  means that the warming from increased  $\text{CO}_2$  concentrations  $C$  is “saturated.” That is, each increment  $dC$  of  $\text{CO}_2$  concentration causes less warming than the previous equal increment. Greenhouse warming from  $\text{CO}_2$  is subject to the law of diminishing returns.

If the U.S. continued to contribute the same fraction  $f_0$  of (4) to world  $\text{CO}_2$  emissions between now and the net zero target date, the U.S. contribution to (13) would be  $f_0 R \Delta t = 7.65$  ppm. But if the U.S. fraction of emissions decreased steadily to zero in the year 2050, the concentration decrement (5) would be

$$\begin{aligned}\delta C &= \int_0^{\Delta t} dt R f_0 \left( 1 - \frac{t}{\Delta t} \right) \\ &= \frac{1}{2} f_0 R \Delta t \\ &= 3.83 \text{ ppm}.\end{aligned}\tag{15}$$

We used the numerical values of (4) and (13) to evaluate the bottom line of (15). Compared to the increase  $\Delta T$  of (14), the temperature would increase by a slightly smaller amount for a U.S. net zero scenario,

$$\begin{aligned}\Delta T' &= S \log_2 \left( \frac{C - \delta C}{C_0} \right) \\ &= 0.1421 \text{ }^\circ\text{C}.\end{aligned}\tag{16}$$

The averted temperature increase  $\delta T$  from net-zero policies is

$$\begin{aligned}\delta T &= \Delta T - \Delta T' \\ &= 0.0085 \text{ }^\circ\text{C}.\end{aligned}\tag{17}$$

The bottom line of (17) came from subtracting the bottom line of (16) from the bottom line of (14).

We can use the top lines of (14) and (16) to find a convenient formula for  $\delta T$

$$\begin{aligned}\delta T = \Delta T - \Delta T' &= S \left[ \log_2 \left( \frac{C}{C_0} \right) - \log_2 \left( \frac{C - \delta C}{C_0} \right) \right] \\ &= S \log_2 \left( \frac{C}{C - \delta C} \right) \\ &= -S \log_2 \left( 1 - \frac{\delta C}{C} \right).\end{aligned}\tag{18}$$

Recall that the base-2 logarithm,  $\log_2(x)$ , of some number  $x$  is related to the base- $e$  (natural) logarithm,  $\ln(x)$ , by

$$\log_2(x) = \frac{\ln(x)}{\ln(2)}. \quad (19)$$

Using the power-series expansion

$$-\ln(1-r) = r + \frac{r^2}{2} + \frac{r^3}{3} + \frac{r^4}{4} + \dots \quad (20)$$

with the last line of (18) we find

$$\begin{aligned} \delta T &= \frac{S}{\ln(2)} \left[ \left( \frac{\delta C}{C} \right) + \frac{1}{2} \left( \frac{\delta C}{C} \right)^2 + \frac{1}{3} \left( \frac{\delta C}{C} \right)^3 + \dots \right] \\ &\approx \frac{S}{\ln(2)} \left( \frac{\delta C}{C} \right) \\ &\approx \frac{S f_0 R \Delta t}{2 \ln(2) (C_0 + R \Delta t)}. \end{aligned} \quad (21)$$

Because of (6), each term on the right of the first line of (21) is at least 100 times smaller than the previous one. So the first term is a good approximation to the sum. The value from the approximate formula on the second or third line of (21) only differs by about 1% from the exact value of  $\delta T$ , which is given by the sum of the infinite number of terms on first line. Eq. (21) completes the derivation of (7).

### 3 Alternate Assumptions

Using the last line of (7), we can see what happens if we use alternate assumptions about the averted temperature increase. For many years the United Nations Intergovernmental Panel on Climate Change (IPCC) asserted that the most likely value of the equilibrium climate sensitivity is four times larger than the feedback-free value (3),

$$S = 3.0 \text{ }^\circ\text{C}. \quad (22)$$

This assumes a positive feedback that increases the warming by 400%. According to Le Chatelier's principle, most feedbacks in nature are negative. But if we use the dubious value (22) in (7) we find that the U.S. net zero scenario would avert a temperature increase of

$$\delta T = 0.034 \text{ }^\circ\text{C}, \quad (23)$$

less than four hundredth of a degree centigrade.

As less developed countries use fossil fuels to raise their standards of living, it is reasonable to expect that the rate of growth of atmospheric  $\text{CO}_2$  will increase above the current value, even if the U.S. and other countries implement net zero policies. Suppose the growth rate increases by 30% from the current value of (11) to

$$R = 3.25 \text{ ppm year}^{-1}. \quad (24)$$

If we use the value (24) in (7) we find that driving U.S. CO<sub>2</sub> emissions to zero by the year 2050 would avert a temperature increase of

$$\delta T = 0.011 \text{ }^{\circ}\text{C}, \quad (25)$$

slightly more than one hundredth of a degree centigrade.

The temperature increment (25) was estimated for the physically reasonable climate sensitivity  $S = 0.75 \text{ }^{\circ}\text{C}$  of (3), and the growth rate  $R = 3.25 \text{ ppm year}^{-1}$  of (24) that is 30% larger than the current growth rate  $R = 2.5 \text{ ppm year}^{-1}$  of (11). If we use IPCC's 4-times larger, but dubious climate sensitivity  $S = 3.0 \text{ }^{\circ}\text{C}$  of (22), along with the larger growth rate  $R = 3.25 \text{ ppm year}^{-1}$  of (24), we find an averted temperature increase of

$$\delta T = 0.042 \text{ }^{\circ}\text{C}, \quad (26)$$

slightly more than four hundredth of a degree centigrade.

## 4 Worldwide Net Zero

We can calculate the averted temperature increase,  $\delta T$ , if the entire world adopted net zero policies and reduced their CO<sub>2</sub> emissions to zero by the year 2050. Then the formula for the averted temperature increase would be given by (7) with the fraction  $f_0 = 1$ ,

$$\begin{aligned} \delta T &= \frac{SR\Delta t}{2 \ln(2) (C_0 + R\Delta t)} \\ &= 0.070 \text{ }^{\circ}\text{C}. \end{aligned} \quad (27)$$

The numerical value of the second line comes from evaluating the expression with the most likely numerical values of (3), (8), (9), (10) and (11).

Using the four-times larger sensitivity  $S = 3 \text{ }^{\circ}\text{C}$  of (22) instead of the more physically reasonable value,  $S = 0.75 \text{ }^{\circ}\text{C}$  of (3) to evaluate (27) we find an averted temperature increase of

$$\delta T = 0.28 \text{ }^{\circ}\text{C}. \quad (28)$$

## 5 The MAGICC Model

In a prepared statement before the U.S. Senate Budget Committee, B. Zycher [5] showed that the MAGICC model (Model for the Assessment of Greenhouse Gas Induced Climate Change) [6], projects that if the U.S. reduced emissions to zero in the year 2050, the averted temperature increase in the year 2100 would be

$$\delta T = 0.173 \text{ }^{\circ}\text{C}. \quad (29)$$

The time to net zero for this scenario would be

$$\Delta t = 75.5 \text{ year}, \quad (30)$$

instead of  $\Delta t = 25.5$  year as in (10). Zycher used an even larger climate sensitivity

$$S = 4.5 \text{ }^{\circ}\text{C}, \quad (31)$$

than the value,  $S = 3.0 \text{ }^{\circ}\text{C}$  of (22). From inspection of (15) we see if net US emissions were reduced to zero in a shorter shorter time

$$\Delta t_{\text{us}} = 25.5 \text{ year}, \quad (32)$$

than the time  $\Delta t = 75.5$  years until the year 2100, the averted concentration increment in the year 2100 would be

$$\begin{aligned} \delta C &= Rf_0 \Delta t - \int_0^{\Delta t_{\text{us}}} dt Rf_0 \left(1 - \frac{t}{\Delta t_{\text{us}}}\right) \\ &= Rf_0 \left(\Delta t - \frac{1}{2} \Delta t_{\text{us}}\right) \\ &= 18.8 \text{ ppm}. \end{aligned} \quad (33)$$

a factor of about 5 larger than (15) because of the long, 50-year interval from 2050 to 2100 of net zero U.S. emissions. The numerical value on the bottom line of (33) was evaluated with (4), (10), (11) and (32).

Substituting (33) into (21) we find

$$\begin{aligned} \delta T &= \frac{S}{\ln(2)} \left(\frac{\delta C}{C}\right) \\ &= \frac{S f_0 R (2\Delta t - \Delta t_{\text{us}})}{2 \ln(2) (C_0 + R\Delta t)} \\ &= 0.20 \text{ }^{\circ}\text{C}. \end{aligned} \quad (34)$$

The numerical value on the bottom line of (34) is reasonably close to the MAGICC estimate (29). It was evaluated with the parameter values from (4), (9), (11) and (30) – (32).

## 6 Conclusion

As shown by (1), (23), (25) and (26), there appears to be no credible scenario where driving U.S. emissions of  $\text{CO}_2$  to zero by the year 2050 would avert a temperature increase of more than a few hundredths of a degree centigrade. The immense costs and sacrifices involved would lead to a reduction in warming approximately equal to the measurement uncertainty. It would be hard to find a better example of a policy of all pain and no gain.

## References

- [1] R. Lindzen, *On Climate Sensitivity*  
<https://co2coalition.org/wp-content/uploads/2021/08/On-Climate-Sensitivity.pdf>

- [2] S. I. Rasool and S. H. Schneider, *Atmospheric Carbon Dioxide and Aerosols: Effects of Large Increases on Global Climate*, Science **173**, 138-141  
<https://www.jstor.org/stable/1732207>
- [3] United States Emissions of CO<sub>2</sub>,  
<https://ourworldindata.org/co2/country/united-states#what-share-of-global-co2-emissions-are-emitted-by-the-country>
- [4] CO<sub>2</sub> Concentration in the Year 2024,  
<https://gml.noaa.gov/ccgg/trends/monthly.html>
- [5] B. Zycher, formal statement before U.S. Senate Committee on the Budget, March 29, 2023, <https://www.budget.senate.gov/imo/media/doc/Dr.%20Benjamin%20Zycher%20-%20Testimony%20-%20Senate%20Budget%20Committee.pdf>.
- [6] The MAGICC Model, <https://magicc.org/>

## Conclusion

As shown by (1), (23), (25) and (26), there appears to be no credible scenario where driving U.S. emissions of CO<sub>2</sub> to zero by the year 2050 would avert a temperature increase of more than a few hundredths of a degree centigrade. The immense costs and sacrifices involved would lead to a reduction in warming approximately equal to the measurement uncertainty. It would be hard to find a better example of a policy of all pain and no gain.

I am originally from Omaha but moved away for my job for 50 yrs to 5 cities that were from 2 to 6 times the size of Omaha, I also owned property in those cities, so had to pay utilities. And not once did I ever have a power outage that lasted for as long as Omaha's just did last month.

Our Omaha population is 480K and over 221K in Omaha were without power. That is over 50% of your customers, that you promised reliable service.

Your mission statement is to provide affordable and reliable services to your customers. You are not making the correct decisions for the money that we pay you to work for us!

80 to 90% of our Omaha voting population and also the voting population of Nebraska is Conservative. That is the voting opinion of your customers . 80 to 90% of decisions that you make should be conservative and not progressive. Unfortunately the salary that we pay you puts each of you into the 10% of the voting public that is not conservative any longer, and also not of the common customers of this city.

In my neighborhood of SW Omaha, supposedly all electricity is underground and should not be affected by wind. So somehow I'm still without power for 4 days because of decisions down the line that were made to not keep up on problems or inventories, etc.

These are the questions that the 50% of Omaha asked while we were without power, air-conditioning, lights and computers for days at a time. Couldn't better decision have been made to not hurt so many people, 50% of Omaha.

Coal, gas, oil and nuclear are reliable and inexpensive, not solar and wind which are ridiculous for Nebraska.

Finally, I would like to ask about the service charge that is charged every single month. What service am I paying for in that service charge that is not in the high bill I am paying. Aren't you always giving service and why are you not giving a discount to vets and seniors as every other company does for those who live on fixed incomes, especially when we have no other choice other than OPPD.

Thank you for your time.  
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