

# Dow Inc. (DOW)

## Vote Yes: Item #5

### Shareholder Proposal on Single-Use Plastics

Annual Meeting: April 11, 2024

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## THE RESOLUTION

**Resolved:** Shareholders request that the Board issue an audited report addressing whether and how a significant reduction in virgin plastic demand, as set forth in *Breaking the Plastic Wave's* System Change Scenario to reduce plastic pollution, would affect Dow's financial position and assumptions underlying its financial statements. The report should be at reasonable cost and omit proprietary information.

**Supporting Statement:** Proponents recommend that, at the Board's discretion, the report include:

- Quantification (in tons and/or as a percentage of total) of the company's polymer production for SUP markets;
- A summary or list of the company's existing and planned investments that may be materially impacted by the SCS;
- Disclosure of safety, emissions, energy, and process efficiency data associated with planned or operating chemical recycling technologies.

## SUMMARY

In this resolution, shareholders ask Dow to follow through on its stated ambition to combat plastic pollution by assessing how the transition toward reduced demand for plastics, which has been called for by corporate, government, and scientific leaders, will impact the Company's business.

Plastic, with a lifecycle social cost at least ten times its market price, threatens the world's oceans, wildlife, and public health.<sup>1</sup> Concern about the growing impact of global plastic pollution has elevated the issue to crisis levels.<sup>2</sup> Of particular concern are single-use plastics (SUPs) which make up the bulk of the 14-million metric tons of plastic deposited in waterways annually.<sup>3</sup> Without drastic action, this amount could triple by 2040.<sup>4</sup>

A significant reduction in virgin plastic demand is critical to curbing the flow of plastic waste.<sup>5</sup> The leading peer-reviewed plan for plastic pollution reduction is the Pew's Charitable Trust's report, *Breaking the Plastic Wave*,

<sup>1</sup> [https://wwflac.awsassets.panda.org/downloads/wwf\\_pctsee\\_report\\_english.pdf](https://wwflac.awsassets.panda.org/downloads/wwf_pctsee_report_english.pdf)

<sup>2</sup> <https://www.science.org/doi/10.1126/sciadv.1700782>

<sup>3</sup> <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32019L0904&from=EN;https://cdn.minderoo.org/content/uploads/2023/02/04205527/Plastic-Waste-Makers-Index-2023.pdf>, p.17

<sup>4</sup> <https://www.nationalgeographic.com/science/article/plastic-trash-in-seas-will-nearly-triple-by-2040-if-nothing-done>

<sup>5</sup> <https://www.theguardian.com/environment/2021/jul/01/call-for-global-treaty-to-end-production-of-virgin-plastic-by-2040>

which found that plastic leakage into oceans can be reduced by 80% by 2040 under its System Change Scenario (SCS) by 2040, but requires a significant (30%) absolute reduction in use of virgin SUP.<sup>6</sup>

While the petrochemical industry has no specific plans to reduce plastic production or pollution, countries and consumer brands are beginning to drive reductions in virgin plastic use and call for reduced plastic production.<sup>7</sup> A legally binding global plastics treaty is being negotiated, which may mandate production caps. Large SUP users including Unilever, Nestle, Walmart, and Coca-Cola, who may use Dow products, state that the top priority of a global plastics treaty should be “reduction of plastic production and use ... focusing on virgin fossil fuel-based plastic.”<sup>8</sup>

**Dow has been cited as the third largest producer of resins bound for SUPs, resulting in 5.3 million metric tons of SUP waste annually. 30% of Dow’s revenue is from polymers bound for SUP applications.**<sup>9</sup> Significant reduction in plastic demand could result in stranded investments in plastic production assets, disrupting the petrochemical industry.<sup>10</sup>

Despite numerous recent reports and articles pointing towards current and projected oversupply of polyethylene, Dow is investing heavily in expanding polyethylene capacity at a time of significant global polyethylene overcapacity which could result in possible overbuild and stranded assets. The Company argues that it will be able to address plastic reduction concerns through chemical (advanced) recycling. However, chemical recycling has a broad range of impacts that must be addressed before investors can be assured that it will provide a safe, cost-effective way to recycle problematic plastics at scale. To avoid both economic and reputational risks, as petrochemical companies begin to commit to using recycled plastics, it is important to understand if the proposed recycling processing technologies are cost-effective, process and energy efficient, and environmentally sound.

A Company analysis of the Pew report’s SCS, discussing how significant reduction in virgin plastic demand would affect Dow’s financial position, would provide shareholders with a better understanding of its demand-related risk assessment and mitigation actions. Further, risks and opportunities associated with the Company’s investments in chemical recycling technologies to process plastic waste, which can pose safety, emissions, and efficiency concerns, need to be disclosed.

## RATIONALE FOR A YES VOTE

- 1. Dow is exposed to economic risk as global leaders and corporate brands call for reduction in plastic production and a transition away from single-use plastics to combat plastic pollution.**
- 2. Dow continues to expand plastic production despite the likelihood of single-use plastic demand reduction.**

<sup>6</sup> [https://www.pewtrusts.org/-/media/assets/2020/07/breakingtheplasticwave\\_report.pdf](https://www.pewtrusts.org/-/media/assets/2020/07/breakingtheplasticwave_report.pdf);  
<https://www.science.org/doi/full/10.1126/science.aba9475>

<sup>7</sup> <https://www.pbs.org/newshour/science/bold-single-use-plastic-ban-kicks-europes-plastic-purge-into-high-gear>;  
<https://www.unep.org/resources/report/legal-limits-single-use-plastics-and-microplastics>; <https://www.unilever.com/news/press-releases/2019/unilever-announces-ambitious-new-commitments-for-a-waste-free-world.html>

<sup>8</sup> <https://www.plasticsnews.com/public-policy/plastics-treaty-talks-open-push-restrain-virgin-resins>

<sup>9</sup> <https://cdn.minderoo.org/content/uploads/2023/02/04205527/Plastic-Waste-Makers-Index-2023.pdf>, p.57, p. 49

<sup>10</sup> <https://www.forbes.com/sites/scottcarpenter/2020/09/05/why-the-oil-industrys-400-billion-bet-on-plastics-could-backfire/?sh=2203b98843fe>



3. Dow has provided inadequate information to investors on the impact of potential plastic demand reductions.
4. Dow should assure shareholders of the efficacy and safety of commitments to produce recycled resin using advanced recycling technologies.

## DISCUSSION

1. Dow is exposed to economic risk as global leaders and corporate brands call for reduction in plastic production and a transition away from single-use plastics to combat plastic pollution.

Global community leaders agree that the current rate of expansion of virgin plastic production is unsustainable, recycling improvements alone are inadequate, and absolute demand reductions are critical. These conclusions are reflected in recent reports by the United Nations Environment Program (UNEP), the Organization for Economic Co-operation and Development (OECD), and the U.S. National Academies of Science, Engineering, and Medicine (NAS), and built into the Pew Scenario of *Breaking the Plastic Wave* (Pew Scenario).<sup>11</sup> The Pew Scenario finds that an absolute demand reduction for virgin single-use plastics is critical to curbing ocean plastic pollution.

Similarly, UNEP underscores that a drastic reduction in unnecessary, avoidable, and problematic plastic is crucial to addressing the global pollution crisis. The OECD calls for restraints on demand and NAS suggests a national cap on virgin plastic production. Even the consumer brands that use Dow's resin products, including the Business Coalition for a Global Plastics Treaty, have stated that the top priority of a global plastics treaty should be "reduction of plastic production and use . . . focusing on virgin fossil fuel-based plastic." This group includes some of the world's largest users of single-use plastics: Coca-Cola Co, Nestle, Mars, PepsiCo, Unilever, Walmart, and petrochemical company Borealis.<sup>12</sup> The group also includes investors with \$5.5 trillion in assets under management (AUM): ASN Bank, BNP Paribas Asset Management, Fidelity International, and Robeco.

A recent study funded by Plastics Europe, a leading plastics industry trade association, states that "it is technically feasible and environmentally beneficial to reduce 38% (7.2 million tons) of projected plastic packaging demand by 2050 through elimination actions and development of reuse models without compromising on functionality."<sup>13</sup>

Countries and major brands continue to commit to significant cuts in the use of virgin and single-use plastics.<sup>14</sup> In 2022, California passed the first U.S. law mandating specific cuts in the use of plastic packaging: 25% by 2032.<sup>15</sup> These actions could have significant implications for Dow as the world's third largest producer of single-use plastic resins.

<sup>11</sup> <https://www.unep.org/news-and-stories/press-release/comprehensive-assessment-marine-litter-and-plastic-pollution>;  
<https://www.oecd.org/newsroom/plastic-pollution-is-growing-relentlessly-as-waste-management-and-recycling-fall-short.htm>;  
<https://www.washingtonpost.com/climate-environment/2021/12/01/plastic-waste-ocean-us/>

<sup>12</sup> <https://www.plasticsnews.com/public-policy/plastics-treaty-talks-open-push-restrain-virgin-resins>

<sup>13</sup> <https://plasticseurope.org/reshaping-plastics/>

<sup>14</sup> <https://www.weforum.org/agenda/2020/10/canada-bans-single-use-plastics/>; <https://www.pbs.org/newshour/science/bold-single-use-plastic-ban-kicks-europes-plastic-purge-into-high-gear>

<sup>15</sup> <https://www.nytimes.com/2022/07/05/us/california-plastics-law.html>

Other large companies with significant plastics-related business, like BP, have assessed the potential impacts of significant plastic regulations to their business model. In the Pew Scenario, virgin plastic demand would peak by 2027 – leaving an estimated \$400 billion of global investment in virgin plastic production potentially stranded, according to one analysis.<sup>16</sup>

Given these developments, shareholders expect major polymer producers like Dow to begin positioning their businesses for a world in which single-use plastic demand is declining. Investors seek enhanced company disclosure on potential risks and impacts to Dow’s petrochemical investments, including consideration of the most comprehensive existing reduced demand scenario -- the Pew Scenario.

## 2. Dow continues to expand plastic production despite the likelihood of single-use plastic demand reduction.

In its latest annual report from 2022, Dow announced projects across its global asset network that will deliver approximately 350,000 *additional* tons per year of polyethylene production. This is despite near-term cuts in global demand which, in August 2022, forced Dow to temporarily reduce by 15% its production of polyethylene for use in packaging.<sup>17</sup>

It appears that Dow is planning to build a new petrochemical facility in Saskatchewan, Canada to expand ethylene (1.8 million metric tons annually) and polyethylene production (3.2 million metric tons annually) by 2030. The cost of the project is estimated at \$9 billion.<sup>18</sup> **The Company is investing heavily in expanding polyethylene capacity at a time of significant global polyethylene overcapacity.** According to a lead chemicals researcher at S&P, ethylene use rates -- the amount converted into new materials like plastic -- have fallen to their lowest level in four decades because of “a gross overbuild” of production capacity.<sup>19</sup> Chemical & Engineering News reports that “every major commodity chemical market, with a few exceptions, like chlorine, is now entering a period of severe overcapacity that will make it difficult to eke out profits.”<sup>20</sup> This puts Dow at high risk of possible overbuild and stranded assets. According to the Institute for Energy Economics and Financial Analysis (IEEFA), “Dow’s project in Canada could be the poster child for what not to do. It is being built to serve an oversupplied market, and it ties up significant capex and employs technology with a pattern of poor performance. The likelihood of value loss is high.”<sup>21</sup>

The Company’s expansion plans are also inconsistent with the expected reduction in demand foreseen by the Pew Scenario.

## 3. Dow has provided inadequate information to investors on the impact of potential plastic demand reductions.

In its statement in opposition to the proposal, Dow states that currently enacted or contemplated

<sup>16</sup> <https://carbontracker.org/reports/the-futures-not-in-plastics/>

<sup>17</sup> <https://www.barrons.com/articles/dow-stock-lyondellbasell-chemicals-downgrade-51661781336>

<sup>18</sup> [https://ieefa.org/sites/default/files/2024-01/Petrochemicals%20Losing%20Financial%20Appeal\\_January%202024.pdf](https://ieefa.org/sites/default/files/2024-01/Petrochemicals%20Losing%20Financial%20Appeal_January%202024.pdf)

<sup>19</sup> <https://www.ft.com/content/6b3f4405-a994-4fb1-b667-1f49c5357db8>

<sup>20</sup> <https://cen.acs.org/business/petrochemicals/Fallow-days-loom-petrochemical-firms/101/i36#:~:text=It%20will%20take%202%E2%80%933,several%20years%2C%E2%80%9D%20he%20said>

<sup>21</sup> [https://ieefa.org/sites/default/files/2024-01/Petrochemicals%20Losing%20Financial%20Appeal\\_January%202024.pdf](https://ieefa.org/sites/default/files/2024-01/Petrochemicals%20Losing%20Financial%20Appeal_January%202024.pdf)

SUP bans would not materially impact the Company. No data or methodology is provided regarding this conclusion, nor time frame, and the Company has not disclosed assessment for what future bans and associated materials are likely to be proposed and passed, and what their impact would be. This is not an adequate response to the proposal. While the proposal asks Dow to look at the impact of a 30% reduction in demand through 2040, the Company instead assesses the impact of a 3.5% or less reduction based on 2023 revenues.<sup>22</sup>

The information provided by the Company concluding that SUP applications *currently* targeted by bans account for less than 5% of total demand is scant at best, and of questionable reliability, consisting of two pie chart graphics referring to data generated by Chemical Market Analytics, but with no supplemental information on the actual data, assumptions, definitions, or methodology used. There is no identification as to what specific bans were used in the calculation nor how single-use plastic was defined. This information is essential to ensure that investors can evaluate projected revenue impact. **Investors thus are left with incomplete information.**

Additionally, Dow claims that “even if all the plastics bans under consideration were hypothetically to come into effect, the estimated result would be less than 2% for Dow’s total sales based on 2023 revenue,” however this is an incomplete assessment. By only considering products likely to be banned, **Dow’s assessment fails to capture a potential reduction in demand due to other factors not related to bans, such as major brands who may voluntarily turn away from flexible packaging, a major product, to meet their recyclability goals.**<sup>23</sup> Further discussion on reduced demand for products from Brands is discussed in Response to Statement in Opposition section below.

Ironically, while denying material impact based on opaque data in its statement in opposition, Dow has already acknowledged this possibility of harm its 2022 annual report, stating that “increased pressure on the use of plastics. . . could cause reduced demand for the Company’s polyethylene products which could negatively impact the Company’s financial condition, results of operations and cash flows.”<sup>24</sup> Proponents agree and are asking the Company to provide a more thorough and transparent analysis of impact.

#### **4. Dow should assure shareholders of the efficacy and safety of commitments to produce recycled resin using advanced recycling technologies.**

Dow touts ‘chemical’ or ‘advanced recycling’ as the solution to the plastic pollution problem due to limitations in mechanical recycling. The most developed forms of chemical recycling are pyrolysis and gasification, which convert plastic waste into liquid or gaseous hydrocarbon products that can be converted back into plastics or fuels. There are numerous concerns about pyrolysis, however, including high energy use, toxic residues, and low processing efficiency. A recent report from the National Renewable Energy Laboratory (NREL) stated that pyrolysis, has very low processing efficiency rates, destroying between 86 and 99% of feedstock plastic in the conversion process.<sup>25</sup> Another study put the efficiency rate slightly higher at 42%.<sup>26</sup> The less plastic-ready material that comes out of these processes, the more virgin plastic must be used, perpetuating reliance on fossil fuels. Pyrolysis oil, a product of pyrolysis, often needs further refining to remove impurities before it can be converted into plastic products, requiring more cost and effort. Investors are concerned that a large majority of

<sup>22</sup> <https://www.sec.gov/ix?doc=/Archives/edgar/data/0001751788/000119312524055895/d518047ddef14a.htm>, p. 111

<sup>23</sup> <https://www.foodnavigator.com/Article/2022/11/02/Plastic-targets-expected-to-be-missed-Ellen-MacArthur-progress-report>; <https://www.edie.net/ellen-macarthur-foundation-corporate-plastic-recycling-and-reuse-targets-unlikely-to-be-met/>

<sup>24</sup> [https://s23.q4cdn.com/981382065/files/doc\\_financials/2023/ar/2022\\_Dow\\_Inc\\_Annual\\_Report.pdf#xd\\_co\\_f=MmEwZTc4ZGQ1MTFiNTdmYTAwYzE2MDg0OTA5NjUzMzY=](https://s23.q4cdn.com/981382065/files/doc_financials/2023/ar/2022_Dow_Inc_Annual_Report.pdf#xd_co_f=MmEwZTc4ZGQ1MTFiNTdmYTAwYzE2MDg0OTA5NjUzMzY=), p.23

<sup>25</sup> <https://www.nrel.gov/docs/fy14osti/62368.pdf>

<sup>26</sup> <https://www.sciencedirect.com/science/article/pii/S1364032122006049>

input materials and energy may be consumed in the process of converting plastic waste into much smaller outputs of hydrocarbons and potential plastic product.

Pyrolysis can also generate ash containing halogens and heavy metals that need to be properly managed. There are significant environmental justice concerns regarding hazardous waste, air pollutants, and greenhouse gas emissions from chemical recycling facilities, which are often sited in low-income communities, communities of color, or other marginalized communities.

Aside from these issues, there is concern that chemical recycling will scale too slowly to have a substantial impact. A National Academy of Sciences study concluded that chemical recycling technologies are “unproven to handle the current plastic waste stream and existing high-production plastics.”<sup>27</sup> Chemical recycling processes can take 17 years to reach commercial scale operation. The Pew report stated that plastic-to-plastic chemical recycling at scale is likely to begin only after 2030 and can handle only 6% of plastic waste by 2040. A September 2023 report by the Nordic Council of Ministers models the impact of 15 potential global policy interventions on plastic pollution through 2040.<sup>28</sup> The report concludes that, at best, chemical recycling will only recycle 15.4 million tons of plastic waste in 2040 — a mere 3% of all plastic waste generated, casting doubt on the relevance and utility of chemical recycling to the management of plastic waste into the future.<sup>29</sup>

To the extent that Dow relies on advanced recycling to address global concerns about plastic pollution, it should disclose the type of technology, inputs, outputs, energy use, carbon emissions, hazardous waste generation, and importantly, processing efficiency (i.e. yield of usable material versus loss) so that investors can be assured that the Company’s investments in these technologies are economically viable rather than economic risks.

Finally, there must be disclosure around operations and transparency around procedures followed to ensure safe and responsible operations to protect nearby residents from harmful plant emissions to air, water, and land.

## RESPONSE TO DOW’S BOARD OF DIRECTORS’ STATEMENT IN OPPOSITION

In Dow’s opposition statement, it states that “overall growth for polyethylene demand remains robust, with global polyethylene demand expected to grow at approximately 1.2 - 1.4x of gross domestic product,” pointing to a chart. The chart is based on an internal analysis blending various sources of industry-wide data, but it presents no information about Dow. See Section 2 above for further discussion.

Dow makes the questionable assertion that currently enacted or contemplated single-use plastic bans would not materially impact the Company because some portion of their SUP production is necessary for “essential” products. There is no evidence provided that the plastic packaging provided by Dow is “essential.” **In fact, to the contrary, an estimated 85% of Dow’s contribution to single-use plastic waste comes from its flexible plastic format products, which cannot be widely recycled and may be phased out soon due to pressure on companies to reduce non-recyclable packaging.**<sup>30</sup> Many consumer brands (Coca-Cola, Nestle, PepsiCo, Target, Unilever, Walmart) have pledged to make all packaging recyclable by 2025; such commitments are likely to

<sup>27</sup> <https://nap.nationalacademies.org/catalog/26132/reckoning-with-the-us-role-in-global-ocean-plastic-waste>, p. 71

<sup>28</sup> <https://www.norden.org/en/publication/towards-ending-plastic-pollution>

<sup>29</sup> [https://static1.squarespace.com/static/5eda91260bbb7e7a4bf528d8/t/655791f76ad9bb07d10e1290/1700237880522/10-30-23\\_Chemical-Recycling-Report\\_web.pdf](https://static1.squarespace.com/static/5eda91260bbb7e7a4bf528d8/t/655791f76ad9bb07d10e1290/1700237880522/10-30-23_Chemical-Recycling-Report_web.pdf)

<sup>30</sup> <https://www.minderoo.org/plastic-waste-makers-index/>

force a switch to other materials if flexible plastic format products, such as those produced by Dow, are not recyclable by 2025. Widespread switching to other materials could significantly impact Dow's future revenue. See Section 3 above for further discussion.

Lastly, Dow touts its commitment to "transform plastic waste and other forms of alternative feedstock to commercialize three million metric tons of circular and renewable solutions annually" by 2030, representing approximately 25% of overall plastics capacity. We appreciate the Company's commitment to increasing recycling, however the commitment by itself is not informative and does not answer the question of what impact a 30% reduction in demand would have on the Company.

The fact that nearly one-third of shares voted for the proposal last year indicates that a substantial number of investors view this as a priority issue where the Company has failed to act to reduce business and reputational risk.<sup>31</sup>

## CONCLUSION

Dow is exposed to economic risk as governments and consumer brands transition away from single-use plastics. The Company needs to disclose these risks and how it is managing them. Proxy analyst ISS recommended a vote in favor of this same proposal last year.

**We recommend a "Yes" vote on this Shareholder Proposal** asking Dow to assess economic risks to its plastic production business under the Pew scenario where demand for virgin plastics is decreased dramatically by efforts to combat ocean plastic pollution. As the world's third largest producer of single-use plastic resins, Dow fails to provide shareholders with sufficient analysis and disclosure on managing growing risks related to projected decline of single-use plastics, which accounts for a significant portion of Dow's business. It further fails to demonstrate the efficacy and safety of using chemically recycled post-consumer plastic as feedstock for new products.

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<sup>31</sup> <http://www.asyousow.org/resolutions/2022/10/31-dow-inc-petrochemical-risks-single-use-plastics>