TAKOMA PARK MOBILIZATION
Environment Committee

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Environment Committee

Comment in Response to the SCMagLev January 20, 2021 Draft Environmental Impact Statement

Submitted to:
The Federal Railroad Administration and
The Maryland Department of Transportation
May 24, 2021

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1. Authors and Acknowledgments

This comment was prepared by Stephanie Kaufman, Rhonda Kranz and Laurie Mazur, with input and assistance from Laurie McGilvray and other members of the Takoma Park Mobilization Environment Committee. The authors acknowledge their debt to the Maryland Coalition for Responsible Transit, from whose draft comment much of the information presented here was drawn.

Questions about our submission or our organization can be addressed to Rhonda Kranz at rhonda2@kranzcons.com

2. Introduction: SCMagLev: A Bad Choice for Maryland

As members of the Takoma Park Mobilization Environment Committee, we write to endorse the "no build" option for the Baltimore-Washington Rapid Rail's SCMagLev train. We also strongly believe a Supplemental Environmental Impact Statement is necessary to address the insufficient analyses and unanswered questions in the Draft Environmental Impact Statement (DEIS), as detailed in our comments.

While the train's proposed routes would not traverse the boundaries of our city or county, we share a profound interest in the outcome of this project—as residents of the national capital region, and as U.S. taxpayers. Here is why:

It Gives Away Public Lands.

As proposed, the SCMagLev project would hand over a substantial swath of federal land—owned by U.S. taxpayers—to a private, for-profit corporation. That land, which includes parts of the Beltsville Agricultural Research Center (BARC), the Patuxent Research Refuge (PRR), and NASA Goddard Space Center, comprises the largest span of contiguous forest on the East Coast between Richmond and Boston. Its woods and wetlands provide irreplaceable ecosystem services—sequestering carbon, absorbing and filtering flood water, and reducing the urban heat island effect—as well as recreational benefits for the people of the region. If it is destroyed or degraded, this invaluable public resource cannot be replaced. Moreover, the giveaway invites future corporate "takings" of public land.

The Cost is Exorbitant.

The estimated cost of the SCMagLev project is roughly $15 billion, or $375 million per mile, without cost overruns. Recent experience with the Purple Line suggests the actual price tag could be higher still. Taxpayers are likely to shoulder much of that cost; the project's website states that financing will come from "a combination of federal and other sources of financing."[1] And the estimated cost to ride the SCMagLev from D.C. to Baltimore—$60 one way—is prohibitive for most of the region's residents. That means the SCMagLev is a form of luxury transport, not public transit. Yet the project could divert resources from the affordable, reliable transit our region desperately needs.

It is Unjust.

The SCMaglev would be the latest in a long and shameful line of transportation and infrastructure projects that harm communities of color. The proposed route runs through neighborhoods that are more than two-thirds Black and Latino, which already suffer from

[1] Baltimore Washington Rapid Rail website, accessed May 16, 2021: Facts – Baltimore-Washington Rapid Rail (bwrapidrail.com)

environmental and health disparities. Residents of Prince Georges County would bear the greatest burden from the train's construction and operation—loss of green space, disruption and pollution—and receive few benefits in return. Indeed, the train would not even stop in the County. Environmental injustices like this one can only proceed with the explicit or implicit support of more privileged communities, like ours. We grant neither.

Better Alternatives Exist.

We appreciate the need to invest in improved rail service, in our state, region and in the nation. But the SCMagLev would siphon resources from MARC and Amtrak, which serve millions of commuters and travelers in Maryland and throughout the Northeast corridor, at a range of accessible price points. Investing in those public transit systems, which are already upgrading their lines and equipment, is the less costly, less disruptive, and more equitable option.

There is more. As outlined below, serious unanswered questions remain about the SCMagLev's safety, ridership projections, advertised jobs created, estimated reductions in congestion and greenhouse gases, and other prospective benefits. But everything we know about this project—and the many things we do not know—point to one conclusion: the SCMagLev is a bad choice for Maryland.

3. Environmental Concerns

Destruction of Habitat

The SCMagLev project threatens the last and largest green space between Baltimore and Washington. Green Corridor, the area that covers Greenbelt Park, the Greenbelt Forest Preserve, BARC and Patuxent Research Refuge, is the largest span of contiguous forest land on the East Coast between Richmond and Boston.[2] If built, this project would permanently destroy over 200 acres in the Patuxent Research Refuge (PRR) and U.S. Department of Agriculture (USDA) Beltsville Agriculture Research Center (BARC) alone.

The project would destroy some of the most ecologically important landscapes in the Mid-Atlantic and one of the most studied in the world, preserved for conservation, agriculture, and research for over 100 years. It would forever destroy their bogs and sensitive wetlands and the wildlife they support. This is exemplified by a recent article in the PNAS, a journal of the National Academy of Sciences, which cites Patuxent Research Refuge as retaining the most plant species among all protected properties in the U.S.[3]

Loss of Open Space

If built, recreational runners, walkers, and bicyclists will lose a large part of what is a relatively safe, nature-focused public road network where they can exercise in a healthy environment. We also will lose the cooling, carbon storage, air pollution capture, calming, and spiritual aspects of this green space.

The late Senator Paul Sarbanes famously referred to the Patuxent Research Refuge as the "lungs of the Baltimore-Washington Region,"[4] referring to the significant contribution of the forests of PRR to air quality. And yet, the DEIS fails to take this function into account. The lack of a qualitative and quantitative analysis of the impact of removal of vegetation on air quality within the project impact area must be fully studied by the Federal Railroad Administration (FRA), or the FRA must reject the proposal to build the SCMagLev and select the no-build option.

Greenhouse Gas Emissions

As identified in the DEIS, construction of the SCMagLev will not reduce greenhouse gas emissions, contrary to the assertions of Baltimore-Washington Rapid Rail (BWRR) and The

[2]Cox, J. High-speed train could go through 'irreplaceable' land in Maryland | Growth & Conservation | bayjournal.com. March 2, 2021

[3] PNAS, Crop wild relatives of the United States require urgent conservation action. https://www.pnas.org/content/117/52/33351

[4] Perry, Matthew C., Editor. 2016. The history of Patuxent—America's wildlife research story. U.S. Geological Survey Circular 1422, 255 pages. https://doi.org/10.3133/cir1422.

Northeast Maglev. The DEIS highlights that the various build alternatives would consume significant quantities of energy, during both construction (6 trillion BTUs) and operation (4 trillion BTUs per year). Increased energy consumption for train operations would account for 38-39% of the region's total transportation energy consumption per year. Claims by BWRR of large reductions in greenhouse gas emissions are misleading. In fact, BWRR has not provided substantiated data to back up their claim that the project would reduce greenhouse gas emissions.

Emission reductions would depend on a very high number of passengers taking vehicles off the road, which BWRR has not shown data to substantiate. More significant is the fact that their calculations do not include an estimated 316 to 815 million kilograms of carbon dioxide which would be released during construction.[5] In addition, operating the SCMagLev would be responsible for additional greenhouse gas emissions because carbon dioxide would be released to generate the electricity to run it. Operating the SCMagLev might result in a net decrease in emissions, but only if a large fraction of the miles traveled on the SCMagLev replaced miles that otherwise would have been traveled in gas-powered cars.

If we replace some of those gas-powered cars with electric vehicles, the reduction is even less. Today's electric cars are about as efficient as the proposed SCMagLev. Electric cars will likely continue to become more efficient as the decades go by. In contrast, if the SCMagLev is built, that technology will be locked in for decades. Electric cars take you to where you want to go, whereas the SCMagLev can only take you from one station to another. For this reason, an electric car is better for the environment than the SCMagLev, even if each uses the same number of kilowatt hours per mile. The roads that electric cars use already exist, while green space would be destroyed to build the track for the maglev. Finally, the recent announcement of President Biden's American Jobs Plan to support electric vehicles through a transformational $15 billion investment to build a national network of 500,000 charging stations further weakens BWRR's claims.

In addition, the DEIS highlights that the project would be significantly less energy efficient than bus and rail travel in terms of people miles traveled. In fact, it is "37 and 20 percent less efficient than existing bus and passenger rail, respectively."[6] This admission contradicts the entire project's purpose and need statement, given that more efficient means of mass transportation already exist.

Groundwater Resources

Public water supply for much of Montgomery County and Prince George's County originates in the Potomac River and/or Patuxent River.[7] The DEIS must provide assurances that the Potomac River and Patuxent Rivers would not be endangered by changes in surface water flows and by changes in water quality and water chemistry.

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[5] https://www.sierraclub.org/sites/www.sierraclub.org/files/sce/prince-georges-group/maglevCO2.appendix.pdf
[6] DEIS. Ch-4.19. Section 4.19.3.2. Page 4.19-10.
[7] https://www.wsscwater.com. Retrieved May 2, 2021.

The Anacostia Watershed

The Anacostia River Watershed drains through both Montgomery and Prince Georges Counties. The watershed has important ecological, infrastructural, and recreational roles. Most of the waterways and sub watersheds within the Anacostia are in populated areas that already face severe disturbance. Both counties are undergoing restoration efforts to repair storm water systems, protect streams from erosion, control water flow, and manage riparian areas. It is important that these areas are protected from degradation. There are a number of negative impacts on the watershed that could occur during construction:

- Sinking and disruption of riverbeds and adjoining wetlands from tunneling and drilling. Especially problematic would be drilling of the shaft east of the river in Bladensburg.
- Breaching of the capped landfills and disposal sites in Colmar Manor and Cottage City, releasing toxic materials.
- Removal of soil during tunneling if soil is contaminated with toxic materials or heavy metals.
- Increased impervious surfaces that lead to increased storm water runoff and pollution from chemicals.
- Loss of vegetation and ecosystem services from direct activities (removal of soil and vegetation, construction) and indirect effects (sedimentation, pollution), which would reduce resilience to perturbation and further damage the system.
- Erosion and sedimentation in surface water with changes in drainage systems and routes, leading to increased turbidity and temperatures with detrimental impacts on aquatic life.

Many areas of the Anacostia watershed contain development built prior to modern storm water management and erosion and sediment control regulations. These areas would be especially susceptible to the types of impacts noted above.

These issues are only minimally discussed in the DEIS and need to addressed.

Federal Public Lands for Private Use

The project requires the use of federal properties by a private, for-profit entity. Those federal properties include the USDA Beltsville Agricultural Research Center, Fish and Wildlife Service Patuxent Wildlife Refuge, and National Aeronautics and Space Administration (NASA) Goddard Space Center. Making federally owned land available to private companies sets a dangerous precedent. Permitting this use of federal land could open the door to other private corporations claiming a “public good” to use and destroy other federally owned land in other parts of the state or the country. Currently, no industrial development permitted in these landscapes for private corporations. This project will change that, and it therefore needs to be documented as

an additional impact. Furthermore, the destruction of federal conservation land directly conflicts with the Biden Administration's goal to protect 30% of U.S. lands and ocean territories by 2030.

4. Transportation System Investments and Impacts

Invest in Existing Rail

Why invest billions of dollars in a train that would compete with the existing Amtrak and MARC rail systems? These existing systems are viable options for commuters and, with additional investment and improvements, they would better serve the Baltimore Washington International (BWI) airport.

Billions of dollars have already been committed to Amtrak and major upgrades to the existing Acela equipment are expected by 2022; this is the less costly, disruptive, and more equitable option.[8] [9] SCMagLev is a costly idea that would compete with and take customers and resources away from the existing MARC and Amtrak rail systems. The consequences described below are wholly inconsistent with the FRA's recent investment in Amtrak and the Biden Administration's stated goal of moving "Amtrak into the 21st Century with Sustained Investment."[10]

Amtrak is the Better Alternative

Amtrak has long experience as the U.S. public rail system. In contrast, BWRR has no experience building or operating a large, complex rail system. It has no "track" record. It does not make sense for the U.S. Department of Transportation (USDOT) to consider approving a new project that would undermine the success of another project it has already funded.

SCMagLev would have a negative impact on Amtrak's ability to repay the $2.5 billion Railroad Rehabilitation and Improvement Finance loan it received in 2015. As stated in the "Economics and Financial Feasibility" section of the DEIS, "In 2030, Amtrak Acela, Amtrak regional rail, and the MARC commuter rail system are expected to accumulate a revenue loss of $23.2 million annually at full build out if Cherry Hill Station is selected, and a revenue loss of $24.8 million annually at full build out if Camden Yards Station is selected."[11] Table D.4-47 in the DEIS displays the ridership and revenue for the three rail systems in 2030 and the forecasted revenue loss resulting from passenger diversions to SCMagLev. The ridership estimates for SCMagLev in 2030 are based upon a 57.3 percent diversion of riders from each of the three rail lines to SCMagLev if the Cherry Hill Station is selected, and 61.3 percent diversion of riders from each of the three rail lines to SCMagLev if the Camden Yards Station is selected.[12]

The FRA has already completed a lengthy and costly evaluation of future transportation needs and considered the capacity constraints of the total transportation system — including rail,

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[8] Donohue, G. Amtrak vs MagLev high speed rail: Maglev line is a Trojan horse. Just fix the current train system. https://www.capitalgazette.com/opinion/columns/ac-ce-column-george-donohue-2021221-20210220-3awl4hbsrngsdly67lm3uw6ozq-story.html

[9] https://www.afar.com/magazine/amtraks-new-high-speed-trains-aim-to-be-at-least-20-percent-more-efficient

[10] https://www.whitehouse.gov/wp-content/uploads/2021/04/FY2022-Discretionary-Request.pdf

[11] DEIS. Economics Impact Analysis Technical Report. Page D-54.

[12] DEIS. Economics Impact Analysis Technical Report. Table D.4-47. Page D-55.

highway, and air — to complete a programmatic Environmental Impact Study (EIS) of the Northeast Corridor (NEC) Future proposals and plans, and Amtrak received FRA's approval.

During this long and costly study, building an additional rail alignment for Amtrak was considered but found to be too expensive and not needed when the plans for the existing system upgrades and enhancements were considered.

Over the next 5 to 10 years, upgrades to Amtrak will require substantial financial commitment from the federal government, Amtrak, and others. These commitments are in direct competition with the plans of BWRR and their proposed SCMagLev. If the SCMagLev is built, we will likely be subsidizing two competing systems.

Competition with Amtrak and MARC

BWRR repeatedly asserts the price of tickets will be on par with Amtrak's Acela train (although the company has stated many times that it is not in competition with Amtrak or MARC). BWRR continually talks about serving the NEC, which Amtrak currently serves and which is one of Amtrak's most profitable lines. Other terminology employed by BWRR suggests the company is providing transportation "options," while denying that the SCMagLev would take riders from Amtrak.

Contrary to BWRR's claims of non-competition, Appendix D.4 of the DEIS[13] does show diversion of passengers from Amtrak and MARC, decreasing the economic viability of these more affordable services on which ordinary Marylanders depend. Table D.4-47 of the DEIS[14] displays the ridership and revenue for the three rail systems in 2030 and the forecasted revenue loss resulting from passenger diversions to SCMagLev.

An overarching concern with the data provided in the DEIS is that it compares the theoretical SCMagLev of 2022 to the current Amtrak and Acela services. The appropriate comparison should be to compare SCMagLev to Amtrak and Amtrak Acela of 2030 and beyond when SCMagLev is projected to be operational and by which time Amtrak and Acela will have undergone many phased-in improvements.

As noted above, the DEIS ridership estimates for 2030 predict a 57.3 percent diversion of riders from each of the three existing rail lines to SCMagLev if the Cherry Hill Station is selected, and a 61.3 percent diversion if the Camden Yards Station is selected. In 2030, Amtrak Acela, Amtrak regional rail, and the MARC commuter rail system are expected to accumulate a revenue loss of $23.2 million annually at full build out if the Cherry Hill Station is selected, and a revenue loss of $24.8 million annually at full build out if the Camden Yards Station is selected.

The DEIS contends that 44.6% of the SCMagLev ridership would come from the non-business segment, which is not defined but excludes commuters, business, and airport travel. The BWRR's inability to unpack the assumptions behind this number--and the risk of an overestimate--could have serious consequences for the economic and commercial viability of

[13] DEIS, Appendix D-4, Economics Impact Analysis. Page D-54.
[14] DEIS, Appendix D-4, Economics Impact Analysis, Table D.4-47, page D-55.

the system. Given the size of this segment and its vagueness, one must question whether the project will be able to generate revenues sufficient to cover the costs of building and maintaining the system.

The DEIS predicts that 32 percent of the annual MARC ridership on the Penn and Camden lines would divert to the SCMaglev.[15] Up to 94 percent of Amtrak riders boarding at D.C., BWI and Baltimore could be diverted to the SCMaglev.[16] If these predictions prove correct, such reductions wuld be catastrophic for MARC and Amtrak. (Bus systems also suffer high losses but can adapt more readily by changing routes.)

Unrealistic Claims about Travel Time

The SCMagLev touts a dubious travel time of 15 minutes from "DC to Baltimore" generally. For purposes of proper comparison of SCMagLev travel time with existing passenger rail between D.C. and Baltimore, the SCMagLev overall travel time should be measured as a trip between Mt. Vernon Square (D.C.) to Cherry Hill, MD – one of the prospective stations near Baltimore. There are several additional time periods left out of BWRR's specious 15-minute claim:

- Time to travel (car, taxi, Metro, bus ride, walk) in congested traffic from home or work to the station/parking because the Mt. Vernon Square station is not co-terminus with NEC transit.
- Time to enter the Mount Vernon Square station.
- Time to get in line to pass through security.
- Time to walk from security to the train platform.
- Waiting for the train to arrive to onboard.
- Waiting for the train to leave.
- Time onloading and offloading passengers at BWI.
- Once at the destination (Cherry Hill, which is not in downtown Baltimore and not co-terminus with the NEC), offboarding the train.
- Time to walk to the outside of the station to obtain transportation (car, bus, light rail). Walking is not considered a viable option due to the distance to the downtown Baltimore area from the Cherry Hill station.

All of these "left out" time segments add many minutes to the supposed "15 minute" trip from D.C. to Baltimore, not to mention any additional costs of parking or public transportation needed to get to and from stations in relation to the starting point and ultimate destination.

In short, any references in the DEIS that promote the inaccurate and misleading "15-minute" SCMagLev travel time between D.C. and Baltimore should be removed.

[15] DEIS. Ch-4.02 Transportation. Section 4.2.4.4 - Impacts. Page 4.2-10.
[16] DEIS. Ch-4.02 Transportation. Section 4.2.5.4 - Impacts. Page 4.2-12.

Traffic Reduction Claims are Dubious

BWRR states that the SCMagLev will reduce intra-regional traffic. With only three stops, the SCMagLev will not take any significant traffic off Maryland roadways. This is not a local commuter transportation option. Ticket prices for the SCMagLev train are unlikely to get drivers out of their cars. Commuter systems such as MARC, Amtrak, and bus services are far more advantageous in removing traffic and they are already developing high-speed options for the region. We should prioritize transit options that serve as many people as possible to reduce traffic.

In addition, BWRR's claims are based on pre-COVID data. The pandemic has accelerated the move to telecommuting and shown its viability on a greater scale. This change will have significant impact on projected ridership of all existing transportation systems. As such, it raises more questions about the need to build the SCMagLev, which should be addressed in any future NEPA document. Specifically, a Supplemental DEIS should answer these questions:

- What are revised ridership projections, given the increasing adoption of telework?
- What are revised ridership projections with increased use of electric cars?
- What level of taxpayer subsidy will now be needed to operate the SCMagLev?
- What is the projected impact of Amtrak ridership and subsidy requirements?
- SCMagLev's funding is reportedly a loan from a Japanese bank; how has coronavirus affected that pledge?

BWRR claims that the SCMagLev should be built because it would reduce road congestion. BWRR's claims that 165 million vehicle-miles of car travel would be avoided each year with the SCMagLev operating between Baltimore and Washington. In fact, traffic on Maryland's highways increased by 1 percent annually (pre-Covid-19), an increase of between 500-600 million vehicle-miles annually.[17] Even if BWRR's claim is correct, which we doubt, the reduction of vehicles travelling on Maryland highways would be overtaken well within the first year of SCMagLev operation.

Furthermore, SCMagLev operations will likely increase transit delays around the system's stations at DC's Mt. Vernon Square and at Baltimore's Cherry Hill (or Camden Yards), and on the D.C. Metro, which was already near capacity during rush-hour, pre-COVID-19.

Finally, road congestion and work zone operations will disrupt communities throughout the train route for 5 to 8 years during construction and will require building and maintenance vehicles using these same roads and highways throughout the project's life. Operation of the SCMagLev will require maintenance vehicles using these same roads and highways, in addition to the current level of vehicle traffic.

[17] TRIP. Restoring Maryland's Interstate Highway System. https://tripnet.org/wp-content/uploads/2020/08/TRIP_Maryland_Interstate_Report_August_2020.pdf

5. Costs

Cost to Build

Maryland has recently experienced significant cost overruns in large transportation projects including the Purple Line and the Inter County Connector. The SCMagLev project could be another major drain on state and federal coffers. Under current law, the investors could ask the state for a bailout if they do not meet their profit projections. This is a huge risk for Maryland taxpayers. Funds could be better spent on transportation projects that would serve many more people.

The DEIS Provides No Details on the Capital Costs for this Project.

The SCMagLev website currently predicts that the project would cost $10 billion to $15 billion without cost overruns.[18] California's bullet train, which was originally estimated to cost $6 billion, has surged to a price of $10.6 billion. If we apply this rate of cost overrun to the SCMaglev, we can realistically expect the project to cost $17.6 billion to $26.5 billion. Even at its current price tag, SCMagLev would still be one of the most expensive rail lines ever built on a per-mile basis, at an estimated cost of $250-$375 million per mile.[19]

The Bank of Japan has agreed to finance $5 billion toward construction. It appears that this is a loan, not a grant. An additional $10 billion more will be needed under the current price tag, and up to $21.5 billion with the likely cost overrun. That money will come from taxpayers. Wayne Rogers, the CEO of Northeast Maglev has said: "Yes, we'll go raise private investment but it can't all be private investment. We can't rebuild our infrastructure 100 percent privately."[20] However, the private sector is unlikely to invest in a project that has no evidence of profitability.[21]

In addition to MARC and Amtrak, a variety of private bus companies already provide affordable trips between D.C. and Baltimore. With such narrow ridership potential, it seems reasonable to be pessimistic about SCMagLev's revenue stream, profitability, and bankability.

In addition, it has been shown that the optimal domain for high-speed ground transportation systems is on long interstation lengths, 100 km (60 miles) or more. On shorter distances, the gains in travel time are so small that it is difficult to justify the high investment.[22] A SCMagLev between Baltimore and Washington, D.C. falls far short of this minimum distance.

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[18] The Baltimore-Washington SuperConducting Maglev Project. FAQs (bwmaglev.info). Retrieved April 26, 2021.
[19] Park, Carol. "Maglev: A high speed train to higher taxes." February 7, 2018. The Maryland Public Policy Institute. Maglev: A high speed train to higher taxes » Policy Blog » Maryland Public Policy Institute (mdpolicy.org)
[20] Ibid.
[21] Ibid.
[22] Vujan, Vukan and Casello, Jeffrey M. "An Evaluation of Maglev Technology and Its Comparison with High-Speed Rail." March 2002. Transportation Quarterly.

With the immense cost estimate of SCMagLev and no private partners ready to step in, the SCMagLev project is doomed to become an expensive failure. In addition, using general taxpayers' money to build a high-speed rail system that will be mainly used by high-income residents will only exacerbate Maryland's transportation systems' inequality.

Given that federal funds will likely be sought for this project, one must ask if this is the best use of those funds. As Eric Boehm wrote in *Reason,* "For the cost of building this train—not operating and maintaining, but merely building it—you could fund both the Washington Metro and the Maryland Transit Administration through 2024 without asking taxpayers or riders to pay a single dime toward either system."[23]

Instead of wasting money, time, and energy experimenting with dangerous projects like SCMagLev, we should redirect our efforts to finding more efficient ways to allocate taxpayers' money to improve the safety of the existing transit systems in Maryland. Making maximal use of scarce budgetary resources and taxpayers' dollars to improve Maryland's transit network should be the priority.

[23] Boehm, Eric. "Proposed Baltimore-to-D.C. Maglev Train Would Cost as Much as Building 1,500 Miles of Highway." October 18, 2017. Reason. Proposed Baltimore-to-D.C. Maglev Train Would Cost as Much as Building 1,500 Miles of Highway – Reason.com

6. Community Impacts

The proposed SCMagLev train would have extremely adverse impacts on communities along its route, both during the construction and operation phases. Those impacts include: disruption and increased traffic; noise and vibration; the permanent loss of green space; reduced property values and displacement. Moreover, as the next section will show, those impacts would be borne disproportionately by "environmental justice" communities—neighborhoods that are predominantly home to people of color and/or low-income residents.
Of course, disruption is to be expected with any major infrastructure project. In many cases, a project's public benefit outweighs the downside costs. That is not the case for the SCMagLev, which would not serve the communities most harmed by its construction, and whose broader public benefits are debatable, at best. Community impacts include:

Construction Disruption and Increased Traffic

Three quarters of the SCMagLev route would run through a 50-foot diameter underground tunnel. [24,25] Excavating and boring that tunnel is an extraordinarily disruptive undertaking that will disfigure communities and ecosystems along the way. Approximately 11,000,000 cubic yards of soil must be removed.[26] Based on an average dump truck capacity of 10 to 14 cubic yards it would require up to 1.1 million dump truck trips.[27]

As a result, communities along the SCMagLev route will be see a dramatic increase in trucks on local roads during the construction phase—resulting in traffic jams and diesel emissions that will significantly impact air quality. According to the DEIS, a total of 51 trucks per day and 190 worker vehicles will arrive and depart for viaduct and electrical substation construction.[28] This amounts to one truck every 11 minutes if truck arrivals were evenly spaced throughout the day. At the same time, residents will be forced to cope with construction-related road closures, snarled traffic and longer commutes by car and bus.[29]

Some communities will face even worse impacts. For example, a tunnel-boring machine launch retrieval site is planned for the Martin's Woods neighborhood in Lanham, MD. Experience with similar projects indicates that residents of Martin's Woods could experience:

- 24-hour noise and vibration from drilling.
- Damage to home interiors, especially drywall cracks (interior walls and ceilings) developing from the movement of heavy vehicles.

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[24] DEIS Appendix G.13, Part L, Section 2.1. Page 3 (86 of 215).
[25] DEIS Appendix G, Part K, Section 6.3. Page 17.
[26] DEIS Appendix G, Part K, Section 6.4. Table 12, Page 84.
[27] Lynch Truck Center, https://www.lynchtruckcenter.com/how-much-can-a-dump-truck-carry/#:~:text=Dump%20trucks%20can%20usually%20carry,length%2C%20height%2C%20and%20width. Accessed May 22, 2021.
[28] DEIS Appendix D.2. Table D.2-33. Section D.2A.15.2. Page A.15-86.
[29] DEIS. Appendix G8, Part K. Table 23. Page 35.

- Environmental impact from run-off into tributaries.
- Dirt and dust in the air.

Noise and Vibration

BWRR claims the SCMagLev is the "quietest" transit option, stating that "The only noise the [SCMagLev] generates is the result of air being displaced as it flies by."[30] But the DEIS -- and actual experiences with similar trains in Japan -- tells a very different story.

The FRA predicts that airborne noise from the SCMagLev will be heard up to 2,100 feet from the guideway.[31] In South Laurel, for example, residents will likely hear trains passing by 208 times every weekday of the year.[32]

Neighbors of a MagLev train in Japan have compared the sound of a passing MagLev to a rumble of thunder. According to one account, "…when the first tests began in 1997, the train caused such a massive boom each time it emerged from its tunnel that homes shook violently."[33] In response, the train's developer installed "hoods" to go over the track at the tunnel exit to reduce noise and vibration. However, even after the hoods were installed, the passing train shakes the walls of nearby homes.[34]

It remains unclear (and unquestioned in the DEIS) whether the train's vibration would affect structures (homes, businesses, etc.) near the SCMagLev during the train's construction and operation. But it is well documented that masonry and concrete structures – foundations, brickwork, poured concrete -- can crack when exposed to vibration. Such cracks can weaken a structure's integrity and lead to water infiltration, which further damages the building and its contents.[35] It is also possible that vibration could affect water wells, septic systems, and geothermal heat pumps.

Moreover, sound and vibration from the SCMagLev building and operation could have profound impacts on sensitive equipment at NASA's Goddard Geophysical and Astronomical Observatory. In a letter to federal and state transportation officials in 2020, Beth Montgomery, a NASA official, warned of disruptions to "a number of NASA activities that require minimal disturbances from vibration, artificial lighting and electromagnetic interference."[36]

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[30] BWRR website Environmental Benefits - Green Energy - Northeast Maglev; accessed May 17, 2021.
[31] DEIS Appendix D.10, D.10.4.2.2. Pages 10-18.
[32] Ibid.
[33] Rector, Kevin "'It can be done': Futuristic Japanese maglev train could revolutionize travel from DC to Baltimore, and beyond." October 27, 2018. The Baltimore Sun.
[34] Ibid.
[35] Woomer, Dan. "What Impact Would the SCMagLev Have on Our Communities?" CATS-MCRT White Paper. January 11, 2021.
[36] Lazo, Luz. Maglev train in Washington-Baltimore region would hurt wildlife and research, officials say - The Washington Post. April 2, 2021.

Loss of Green Space

As noted above, the proposed routes of the SCMagLev would disrupt and destroy a wide corridor of public green space, degrading the quality of life for the area's residents. The train would slash through parts of the Beltsville Agricultural Research Center, the Patuxent Research Refuge, the Greenbelt Forest Preserve and NASA Goddard Space Center. According to the DEIS, the SCMagLev would destroy up to 451 acres of forest.[37] Losing these woods and wetlands would diminish air and water quality, increase vulnerability to flooding, and exacerbate the urban heat island effect.[38] It would also reduce recreational opportunities for the people of the region, with negative consequences for health and well-being.

Reduced Property Values and Displacement

SCMagLev supporters insist that building the train will require "zero residential displacements."[39] Yet quality-of-life impacts from the train's construction and operation could be so severe that many will feel compelled to leave. This is especially true for those who live within a stone's throw of the SCMagLev "Limit of Disturbance," or LOD. Consider, for example, this description of impacts from the DEIS:

> The viaduct would require the removal of a forested buffer between these communities and the [Baltimore Washington Parkway] and would present a stark change from current views. The viaduct would be as close as 65 feet to residences and would impact residents due to increased noise, vibration, and changes to aesthetics.[40]

Worse, those who live beyond the LOD would not be eligible for the monetary compensation offered to property owners through eminent domain. Those who are not forcibly displaced could wind up selling their undesirable properties at considerable financial loss.

[37] DEIS. ES-19.
[38] US Forest Service. Ecosystem Services | Climate Change Resource Center (usda.gov). Accessed May 18, 2021.
[39] Rogers, Wayne. BWRR Letter to Anne Arundel County Council. April 16, 2021.
[40] DEIS. Chapter 4.04. Section 4.4.4.2. Page 4.4-12.

7. Environmental Justice

The SCMagLev fits a long-established pattern of transportation and infrastructure projects that harm low-income communities and people of color. For example, when the Interstate Highway system was built in the 1950s, many highways were intentionally routed through African-American neighborhoods, as a means of enforcing racial segregation. [41] And polluting facilities—from coal-fired power plants to hazardous waste sites—are also disproportionately located in low-income communities and communities of color, which are perceived as the "path of least resistance" due to their relative lack of political power.[42]

The SCMagLev Would Disproportionately Harm EJ Communities

In that context, it is not surprising that the SCMagLev is slated to run through Environmental Justice (EJ) population areas -- neighborhoods that are predominantly Black and Latino and/or home to low-income and working-class residents. Indeed, 69.6% of people in the SCMagLev project's Affected Environment are people of color, and 102 of the 124 census block groups within the Affected Environment meet one or more Environmental Justice thresholds.[43] Fully 18 of the 20 community facilities impacted are in EJ communities.[44]

As a result, EJ communities would bear the greatest environmental, health and quality-of-life burdens imposed by the SCMagLev's construction and operation. The DEIS has catalogued a lengthy list of short-and long-term impacts from the SCMagLev on EJ populations, including:

- Noise and vibration: EJ communities would experience 99% of noise impacts,[45] and 100% of severe vibration.[46]
- Impacts to recreational facilities and parklands: 12 of the 14 parks affected are in EJ communities.[47]
- Aesthetic impacts: of the 56 locations with moderate or high sensitivity aesthetic impacts, 47 would be in EJ population areas.[48]
- Potential spills of hazardous materials are more likely to occur in EJ communities.[49]
- Land use conversion, rezoning, and property acquisitions: 80% of the parcels that would be impacted by these disruptions are in EJ communities.[50]

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[41] NPR, A Brief History Of How Racism Shaped Interstate Highways: NPR. Accessed May 18, 2021.
[42] University of Michigan News. Targeting minority, low-income neighborhoods for hazardous waste sites | University of Michigan News (umich.edu). Accessed May 18, 2021.
[43] DEIS Chapter 4.05, Section 4.5. Pages 5,6.
[44] DEIS Chapter 4.05, Section 4.5.4.2. Page 4.5-10.
[45] DEIS Chapter 4.05, Section 4.5.4.2. Page 4.5-15.
[46] DEIS Chapter 4.05, Section 4.5.4.2. Page 4.5-16.
[47] DEIS Chapter 4.05, Section 4.5.4.2. Page 4.5-11.
[48] DEIS Chapter 4.05, Section 4.5.4.2. Page 4.5-13.
[49] Ibid.
[50] DEIS Chapter 4.05, Section 4.5.4.2. Page 4.5-15.

EJ communities already suffer from environmental and health disparities; the SCMagLev would only make them worse. Two towns in the path of the SCMagLev—Beacon Heights and Woodlawn—illustrate the potential for increased harm.[51]

Beacon Heights and Woodlawn are both EJ communities: Beacon Heights is in the 86th percentile in Maryland for people of color and in the 81st percentile in Maryland for low-income populations; Woodlawn is in the 87th percentile in Maryland for people of color and in the 77th percentile for low-income populations.[52]

Both communities already experience significant environmental hazards. The majority of Beacon Heights' and Woodlawn's EJ indices for pollutants and environmental harms are already above the 90th percentile for the State of Maryland.[53] Beacon Heights and Woodlawn are in the 95th percentile for particulate matter (PM2.5), in the 94th/93rd percentile for diesel, and 94th/93rd percentile for respiratory hazards.[54]

Consider the added impact of the SCMagLev on these burdened communities. In addition to the increase in truck traffic referenced in the previous section, the DEIS states that construction will contribute significant diesel emissions from the standby generation facilities powering the tunnel boring machines, which the DEIS expects will use 4.9 trillion MMBTUs of energy.[55] These vehicles and machines will also add more particulate matter to the already high levels in Beacon Heights and Woodlawn.

Summarizing such concerns, Sonja Wyatt, a member of the NAACP Committee on the Environment and Health, has said: "The SCMagLev is yet another project with overwhelmingly negative effects on health, environmental sustainability and quality of life in Prince George's County."[56]

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[51] Information in this section is drawn from a memorandum entitled "Comments on Baltimore-Washington Superconducting MAGLEV Project Draft Environmental Impact Statement and Draft Section 4(f) Evaluation (EIS No. 20210010)," submitted on behalf of the Beacon Heights and Woodlawn Community Groups, April 23, 2021.
[52] EPA, *EJ Screen*, https://ejscreen.epa.gov/mapper/. Accessed Feb. 5, 2021.
[53] Ibid.
[54] Ibid.
[55] DEIS, Chapter 4.19-14.
[56] Wyatts, Sonja. "SCMAGLEV Testimony." www.youtube.com/watch?v=A-9seVJUR50. April 2021.

The SCMagLev Would Worsen Health Disparities

The SCMagLev would exacerbate health disparities from air pollution in affected EJ communities—a legacy of generations of environmental injustice and racism.[57] *The Washington Post* notes that "nearly every source of the nation's most pervasive and deadly air pollutant disproportionately affects Americans of color."[58] The communities along the train route are particularly vulnerable: The American Lung Association has given a grade of "F" for ozone to all three of the counties along the route: Anne Arundel, Baltimore, and Prince Georges.[59] It is well documented that higher levels of air pollution are linked with high rates of asthma and other respiratory disease,[60] and also to higher mortality rates from COVID-19.[61]

Noise and vibration from the SCMagLev's construction and operation would also have a disproportionate impact on health in EJ communities. Chronic exposure to noise can lead to cardio-metabolic diseases which exacerbate health problems that disproportionately affect EJ populations, such as hypertension, diabetes, hypercholesterolemia, and others.[62] And vibration is known to cause fatigue, stomach problems, headache, loss of balance and 'shakiness' shortly after or during exposure.[63] Even relatively mild vibration can disrupt sleep and affect cardiovascular health.[64]

Pain Without Gain

EJ communities would bear the greatest burden from the train's construction and operation and receive few benefits in return. Indeed, the train would not even stop in the affected communities. And the projected average price of a one-way ticket on the SCMagLev--$60—would be prohibitive for the area's low-income residents.

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[57] Varanasi, Anaradhi. "Over 14 million people of color in the US live in counties with high air pollution." https://www.forbes.com/sites/anuradhavaranasi/2020/04/27/over-14-million-people-of-color-in-the-us-live-in-counties-with-high-air-pollution/?sh=64985d2c5301. April 27, 2020.

[58] Eilperin, Juliet and Fears, Darryl. "Deadly air pollutant 'disproportionately and systematically' harms Americans of color, study finds." Washington Post 28 April 2021.

[59] American Lung Association. "State of the Air Report Card." www.lung.org/research/sota/city-rankings/states/maryland. Retrieved May 2, 2021.

[60] CDC. Asthma and Air Pollution | Air Pollution, Air Quality and Asthma Infographics | NCEH (cdc.gov). Accessed May 18, 2021.

[61] Harvard TC Chan School of Public Health. Air pollution linked with higher COVID-19 death rates | News | Harvard T.H. Chan School of Public Health. Accessed May 18, 2021.

[62] Münzel, Thomas; Sørensen, Mette; Schmidt, Frank; Schmidt, Irwin; Steven, Sebastian; Kröller-Schön, Swenja; and Daiber, Andreas. U.S. National Library of Medicine, National Institutes of Health. "The Adverse Effects of Environmental Noise Exposure on Oxidative Stress and Cardiovascular Risk." www.ncbi.nlm.nih.gov/pmc/articles/PMC5898791/. March 20, 2018.

[63] Canadian Centre for Occupational Health and Safety. "Vibration and Health Effects." www.ccohs.ca/oshanswers/phys_agents/vibration/vibration_effects.html#:~:text=Whole%2Dbody%20vibration%20can%20cause,long%20car%20or%20boat%20trip. Retrieved May 2, 2021.

[64] Waddington, David; Woodcock, James; Jansson, Sabine; Smith, Michael G.; Persson Waye, Kerstin. The National Academies of Sciences, Engineering, and Medicine. "CargoVibes: human response to vibration due to freight rail traffic Railway Induced Vibration-Human perception of vibration." file:///home/chronos/u-5fe577621991904e4808d243f00c8a58300ecd37/MyFiles/Downloads/uic-railway-induced-vibration-report-2017.pdf. October 2015.

This argument is best stated by Prince George's County Councilmembers Jolene Ivey and Danielle Glaros, in a recent *Washington Post* op-ed. They write: "As our country confronts our historic — and current — mistreatment of Black and brown people at the hands of police and the criminal justice system, we must acknowledge and address the ways that land use, development and transportation projects have affected these exact same communities in a discriminatory way.

…Today it is the Northeast Maglev — a superconducting magnetic-levitation train, known as SCMagLev or maglev — that would wreak havoc, eliminate green space, pollute our air, suffocate our businesses and siphon off significant business from MARC commuter rail and Amtrak. Prince Georges County would bear the brunt of these negative impacts while realizing no balancing benefits to our community."[65]

[65]Ivey, Jolene & Glaros, Dannielle. "Opinion: Prince George's County won't stand for the maglev – another destructive project for our people." Washington Post. 23 April 2021.

8. Safety of the SCMagLev

Safety should be the number one concern in assessing whether to approve the SCMagLev project. The SCMagLev is based on new superconducting technology that only exists as a prototype on a 26-mile track in Japan. Yet the DEIS asserts its safety without providing adequate information.

Safety of SCMagLev Vehicles and Infrastructure

The DEIS is deficient as it:

- Does not include or provide accessible references to the SCMagLev safety research and findings to substantiate claims that the SCMagLev is safe.
- Does not provide research on, or describe results of, system-wide tests (the Yamanashi test track, not predecessors, unless relevant), including the results from performance, identified problems, and solutions.

Safety of the SCMagLev and its systems must be evaluated based on American standards.

- The Japan SCMagLev train runs predominantly through tunnels in a rural region of the country. On the other hand, the proposed Baltimore to D.C. route includes a significant above-ground portion, which would run through a rural-suburban geography, and service a densely populated region. The safety of a SCMagLev train running through a rural prototype in Japan cannot be used to assure safety of the SCMagLev in the Baltimore Washington corridor.
- Earlier MagLev trains were assessed to be safe, yet a 2006 accident on a train using MagLev technology in Germany killed 23 people after the safety of the system had been certified by the German government.

The safety and crashworthiness of any train system, including the SCMagLev, requires independent U.S. Department of Transportation (USDOT) assessment to assure the safety of passengers, employees, and the public.

As a ground-based transportation system, the SCMagLev should not be exempt from the same evaluation and testing as required of Amtrak and any other passenger rail system. There are many ways the SCMaglev can collide with objects, including where it leaves the guideway, since there is no physical restraint in the guideway hardware to keep the levitated train from rising out of it.

The FRA needs to develop Rules of Particular Applicability (RPAs), employing the Rail Safety Advisory Committee (RSAC) process, to fully assess all safety aspects of the SCMagLev and its supporting structures and systems. This includes, but is not limited to, the safety of the vehicles, guideway, guideway switches, elevated structures, operating system(s), train management system(s), safety system(s), and operating practices of the SCMagLev.

Construction of any part of the SCMagLev should not be permitted to begin until the FRA has fully evaluated the SCMagLev and its systems based on American standards. With independent analyses and evaluations completed and reviewed, the FRA would have sufficient information on which to base their decision to build or not. The SCMagLev DEIS fails to provide this critical, independently verified information and is therefore deficient. As such, without additional information, the FRA should choose the no build option.

Electromagnetic Radiation Concerns

Safety rules are needed to address the dangers of SCMaglev electromagnetic radiation. The DEIS shows shielding needed at passenger stations and on the vehicles, but it is unclear whether this is this sufficient, and whether it is secure from leakage.

The intensity and impact of the electromagnetic radiation from the SCMagLev train is poorly understood. The DEIS relies on data provided by Central Japan Railroad Company (JRC) to determine whether the project meets International Commission on Non-Ionizing Radiation Protection guidelines for limiting exposure to electromagnetic fields (EMFs).

The *Final Alternatives Report* states there would be a "need to maintain a minimum distance of 20 feet below the magnets along the guideway and people traversing below."[66] Radiation emitted from the SCMagLev is so strong that people will not be allowed to be closer than 20 feet from the guideway when underneath it.

No mention is made in the DEIS of this 20-foot figure. It is noteworthy that the DEIS states the electromagnetic radiation from the SCMagLev may limit the range of cell phones, interfere with self-driving cars, and cause shocks to people from metal buildings.[67] The DEIS also says the SCMagLev electromagnetic radiation can affect heart rhythms in certain cardiac pacemakers.[68]

Electromagnetic radiation may lead to the obstruction or degradation of the performance of electrical equipment by inducing unwanted currents and voltages in its circuitry.[69] This could impact cars traveling on the entrance and exit ramps under the viaduct, which will be quite

[66] "SCMagLev Final Alternatives Report." Page 42. November 2018. www.bwmaglev.info/images/document_library/reports/alternatives_report/SCMAGLEV_Alts_Report_Body-Append-A-B-C_Nov2018.pdf.
[67] DEIS Table 4.18-3, page 4.18-9.
[68] DEIS Appendix D11, page 15.
[69] Mathur, Phalguni, and Sujith Raman. Electromanetic Interference (EMI): Measurement and Reduction Techniques." *Journal of Electronic Materials*, Volume 49:5, page 2976. 2020. https://link.springer.com/content/pdf/10.1007/s11664-020-07979-1.pdf.

common, especially at rush morning and evening hours. Any vehicle (e.g., cars, trucks, and motorcycles) systems susceptible to a magnetic field varying at 8 Hz may be threatened. As the majority of vehicles on the road today contain digital circuitry, electromagnetic interference is a concern. While the "SCMagLev Final Alternatives Report" specifies a minimum safe distance for humans and sensitive receivers, it does not consider impacts on vehicles passing under or near the operating SCMagLev.[70]

The DEIS is deficient as it fails to provide the following information:

- If the electromagnetic radiation is safe, why is so much shielding needed at stations, as shown in the DEIS Figure 4.18-1? This implies high levels of radiation emitting from the source. What are these levels, which could affect wildlife during normal operation, as well as bystanders, if something causes a gap in the shielding?
- As the electromagnetic radiation levels associated with the operation of the SCMagLev are much higher than those generated by the German Transrapid maglev, is the 20-foot "Avoidance Zone" sufficient?
- Also noted in the *Final Alternatives Report* are explanations of how passengers will walk under the guideway in tunnel sections during emergency tunnel egress (page 10; also see Figure B-3).[71] How would the passengers be shielded from the SCMagLev's electromagnetic radiation, considering that the distance below the guideway is less than 20 feet? How would safety from electromagnetic radiation be assured for employees inspecting the bogies?

The impact of EMFs on humans and wildlife is discussed further in the next section of this document.

[70] "SCMagLev Final Alternatives Report." Page 42. November 2018. www.bwmaglev.info/images/document_library/reports/alternatives_report/SCMAGLEV_Alts_Report_Body-Append-A-B-C_Nov2018.pdf.
[71] "SCMagLev Final Alternatives Report." Pages 10 and 91. November 2018. www.bwmaglev.info/images/document_library/reports/alternatives_report/SCMAGLEV_Alts_Report_Body-Append-A-B-C_Nov2018.pdf.

9. Health Impacts

Building and operating the SCMagLev would have significant health impacts on humans and wildlife living along--and beyond--the route of the train.

Potential Toxins, Carcinogens, and Radioactive Gas Release

BWRR planning calls for the building of ground-level fresh air and emergency egress (FA/EE) structures to: allow workers into the tunnel for maintenance; provide a way for passengers to leave in case of an emergency, and allow emergency personnel to enter. In case of fire, ventilation facilities will exhaust the smoke out of the tunnel.

With FA/EEs located only every three to four miles along the tunneled section of the SCMagLev, in case of an emergency passengers and emergency personnel would have to walk up to two miles to get to an exit. They would also need to descend or ascend 80 to 150 feet to reach the surface.

The DEIS is deficient as it does not consider the extreme difficulty of entering/exiting the tunnel for disabled passengers, or firefighters carrying 50 to 70 pounds of gear.

At the October 17, 2017, BWRR-Maryland Transit Administration (MTA) Open House, Ms. Cosema Crawford, PE, Senior Vice President representing Louis Berger (the engineering firm hired to study the building of a superconducting maglev train between Washington, D.C. and New York), provided the following information:

> The ventilation facilities' primary purpose is to clear smoke in case there is a fire in the tunnel. The ventilation units will force air into the tunnel on one side of the tunnel section with smoke, and the next ventilation facility will exhaust the smoke-filled air from the tunnel. In other words, one ventilation facility will pressurize the tunnel ahead of the section of the tunnel with smoke and the alternate ventilation facility will depressurize the tunnel to exhaust the smoke to the atmosphere.

If the fire resulted from a train accident or some type of electrical event, the fuel for the fire would likely be lubricants, plastics, and electrical wire insulation. When plastic is burned, it releases dangerous chemicals such as hydrochloric acid, sulfur dioxide, dioxins, furans and heavy metals, as well as particulates. [72] As noted on the American Cancer Society website, many of the compounds that would be generated by such an electrical fire "are known to cause

[72] Biemiller, A. "Can we safely burn used plastic objects in a domestic fireplace? No, you can't. Don't even think about it…" School of Engineering, Massachusetts Institute of Technology. Posted March 12, 2013. https://engineering.mit.edu/engage/ask-an-engineer/can-we-safely-burn-used-plastic-objects-in-a-domestic-fireplace/

respiratory ailments and stress human immune systems, and they're potentially carcinogenic."[73]

The DEIS is deficient as it does not answer the following questions:

- How will the exhausted smoke, containing known toxins and carcinogenic compounds, be mitigated to protect people and wildlife near the FA/EE exhausting into the atmosphere?
- In event of a fire, will the residents and anyone near the FA/EE be alerted that potentially hazardous smoke is venting into their community?
- What are the potential health risks to people and wildlife exposed to smoke vented out of the tunneled section and into the atmosphere?

Electromagnetic Fields Exposure

Some electromagnetic fields (EMFs) occur naturally, and some are man-made. While the medical and scientific communities take the general position that the evidence is inconclusive, the effects of increased exposure to man-made non-ionizing EMFs on human health is a growing concern. Current research is finding connections between EMF exposure and disease.

A growing body of recent studies have found that long-term exposure to man-made EMFs negatively affects human health. Considering the increasing level of electromagnetic energy to which people are exposed, concerns about the additional exposure to the high level of electromagnetic energy generated by the SCMagLev system and its potential to impact our health need to be well researched and quantified before the construction and operation of the SCMagLev is considered.

Technological developments have led to increasing exposure to man-made sources of non-ionizing EMFs. EMF-generating technologies include, but are not limited to: industrial equipment (e.g., welding machines, induction heaters); telecommunications (e.g., television, radio broadcast stations); medical diagnostic tests; and consumer products (e.g., microwaves, mobile phones and base stations, Wi-Fi, Bluetooth, etc.).

The adverse health effects of exposure to EMFs are a growing source of concern within governmental and non-governmental organizations responsible for public health. A number of recent epidemiological studies provide evidence of the possible health effects of EMF exposure, including association between maternal exposure during pregnancy and ADHD in their offspring;[74] sleep disorders; and over 60 reported symptoms of Electromagnetic

[73] To see the current list of known and probable carcinogenic substances from the American Cancer Society, go to: www.cancer.org/cancer/cancer-causes/general-info/known-and-probable-human-carcinogens.html.

[74] De-Kun l., H. Chen, J.R. Ferber, et al. "Association Between Maternal Exposure to Magnetic Field Nonionizing Radiation During Pregnancy and Risk of Attention-Deficit/Hyperactivity Disorder in Offspring in a Longitudinal Birth Cohort." Journal of the American Medical Association. March 24, 2020. https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2763232.

Hypersensitivity Syndrome (EHS) from individuals exposed to EMF, including chest pain, forgetfulness, and numb limbs.[75]

Studies have been done worldwide on the effects of EMF exposure on human health. A key finding of these studies is that the closer the proximity to the source of the EMF, the more symptoms were reported. Examples include:

- The International Agency for Research on Cancer classified EMFs as possibly carcinogenic to humans (group 2B).[76]
- The Scientific Committee on Emerging and Newly Identified Health Risks reported on the effects of EMF exposure in frequencies already used by mobile telephone companies. Researchers found an increased risk of glioma (tumor in the brain or spine) and acoustic neuroma (a benign tumor that develops on the balance (vestibular) and hearing, or auditory (cochlear), nerves leading from your inner ear to the brain), in heavy users of mobile phones.[77]
- An advisory committee of the International Agency for Research on Cancer (IARC) recommended the agency reassess the cancer risks involved with EMFs and recommended this research should be "high priority." [78]

Passengers, Maintenance Workers, and Residents

People with pacemakers and ICDs should be wary of riding the SCMagLev. The USDOT, FRA, and Maryland Department of Transportation (MDOT) Draft Environmental Impact Study (DEIS), states:

> The electric fields associated with the SCMAGLEV may be of sufficient magnitude to impact operation of a few older-model pacemakers; in such cases, the older-model pacemakers may revert to an asynchronous pacing while in the presence of the SCMAGLEV Project. Cardiovascular specialists do not consider prolonged asynchronous pacing to be a problem. Cardiovascular specialists commonly use asynchronous pacing to check pacemaker operation; therefore, while the SCMAGLEV project's electric field may impact operation of some older-model pacemakers while in the presence of the

[75] Leitgeb, N. Chapter 5: Electromagnetic hypersensitivity. In: Advances in Electromagnetic Fields in Living Systems: Volume 5, Health Effects of Cell Phone Radiation, J.C. Lin, ed. New York, New York: Springer. 2009. http://gnusha.org/~nmz787/biological%20radio%20research/Electromagnetic%20Hypersensitivity.pdf.

[76] Moskowitz, J.M. Electromagnetic Radiation Safety: International Agency for Research on Cancer (WHO) Position on Radiofrequency Radiation. November 4, 2019. www.saferemr.com/2019/11/IARC-RFR-cancerrisk.html. Röösli, M. "Radiofrequency electromagnetic field exposure and non-specific symptoms of ill health: A systematic review," Pages 277-287 in Environmental Research 107. 2008. https://media.ellinikahoaxes.gr/uploads/2017/04/rsli2008.pdf.

[77] Scientific Committee on Emerging and Newly Identified Health Risks. "SCENIHR (Scientific Committee on Emerging and Newly Identified Health Risks), Potential health effects of exposure to electromagnetic fields (EMF)." January 27, 2015. Download available at: www.researchgate.net/publication/291329105_SCENIHR_Scientific_Committee_on_Emerging_and_Newly_Identified_Health_Risks_Potential_health_effects_of_exposure_to_electromagnetic_fields_EMF_27_January_2015.

[78] Microwave News. IARC Urged to Revisit RF Risk: Animal Studies Prompt Calls to Upgrade Classification to "Probably Carcinogenic" or Higher. Last updated October 30, 2019. https://microwavenews.com/short-takes-archive/iarc-urgedreassess-rf.

> SCMAGLEV, the result of the interference would be of short duration and not considered harmful. Pacemakers revert to their normal mode of operation once out of the immediate area of the SCMAGLEV Project."[79]

However, there are reasons to doubt these assurances. The DEIS is deficient as it does not answer the following questions:

- Who are the cardiovascular specialists quoted in the DEIS and where are their reports?
- How independent were they in conducting their research?
- The DEIS has references dating back to 1996 to support their statements. Much research and a better understanding about the relationships between EMF exposure and human health have been found over the past two and a half decades. What current research can support their position?

Although the personnel representing the SCMagLev recommend that people (passengers and maintenance workers) do not get within 20 feet of the guideway during operation of the SCMagLev, there is a concern for the residents and businesses near the SCMagLev system. Besides the potential danger coming from the ventilation structures (exposure to toxins, cancer-causing compounds, and radioactive gas released into the atmosphere and surrounding areas),[80] the EMFs generated by the SCMagLev--in addition to the increasing amount of the man-made EMFs continuously injected into our environment--have the potential to increase the negative health consequences of those living and working in proximity to the SCMagLev system.

The BWRR cites the Japanese report that states the SCMagLev's generated EMFs are safe,[81] yet the research to corroborate this statement has not been available to review. With such grave potential adverse health effects from SCMagLev EMF exposure, safety claims should be independently assessed applying American standards of rigor.

Many questions that have arisen require sufficient and replicated independent research to assure that exposure to the EMFs required for the SCMagLev to operate is safe.

The DEIS is deficient as it does not address the following questions:

- How will the maintenance workers for the train system who are constantly exposed to EMFs be protected? Note, in stand-by mode, the SC Magnets maintain a charge enough to generate 1 Tesla.
- What kind of exposure will SCMagLev riders experience and what are the long-term or cumulative health effects?

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[79] DEIS Chapter 4(f), Section 18, Table 4.18-3. Page 9.
[80] Woomer, Dan. "What Impact Would the SCMagLev Have on Our Communities?" CATS-MCRT White Paper. January 11, 2021
[81] JP Central. Superconducting Maglev's magnetic field has no health impact. https://scmaglev.jr-centralglobal.com/about/magnetic/.

- What is the exposure for the workers constructing the train system (over years)? What is the cumulative effect on their health? How will their safety be maintained? What happens if the system is powered up and workers are present?
- What is a safe distance from electromagnets for homes and businesses along the train's route?
- Where is the research to define and substantiate the "safe" distance?

10. Jobs

BWRR has publicized misleading and inconsistent information about the creation of jobs in construction of the SCMagLev. One of the most important selling points for the SCMagLev has been the promise of jobs. Until recently the number provided has been 74,000 jobs.

In 2015, when BWRR was providing testimony to the Maryland Public Service Commission (PSC), the direct testimony stated that "BWRR estimates that the construction phase would lead to the creation of 74,000 "job-years" in Maryland."[82] The footnote (number 17 in that document) gave the definition of "job-years":

> "A job year is equivalent to a year of full-time employment; a worker employed half time for 5 years is enjoying 2.5 job-years, and a full time worker working for ten years represents ten job-years."[83]

What this means is that if it takes eight years to build the SCMagLev, then the number of full-time jobs will be 9,250 (74,000 job-years divided by 8 years equals 9,250 jobs). BWRR has continued to use this grossly inaccurate, misleading terminology in project analysis and public promotion. To protect the integrity of the NEPA process, especially with public comments specific to what is represented in the DEIS, correct and accurate terminology must be used.

With the release of the DEIS, employment projections climbed up to a potential 195,000 job years. The DEIS clearly states "job years" and not "jobs,"[84] yet BWRR continues to misrepresent the benefits of the project.

The lack of transparency and the marketing of the "job opportunities" is misleading in other ways, too. These figures give the impression that these are all going to be new, full time employment opportunities. In project management, the level of effort that is represented by "job years," in addition to new jobs, includes existing jobs that "touch" the project. That includes:

- All of the current BWRR and Northeast MagLev employees including executives, administrative staff, support staff, technical and engineering staff.
- Currently employed full-time staff at consulting technical companies.
- Currently employed manufacturing line employees, such as those in Japan who work for Central Japan Railway Company (JRC), the maker and manufacturer of the trains and the technology that support the train.
- Currently employed JRC executives, administrative staff, support staff, technical and engineering staff.

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[82]Maryland Public Service Commission Testimony. Case No. 9355. Direct Testimony of C. Shelley Norman, PhD. October 14, 2015. pp 11/31.
[83]Ibid.
[84] DEIS. Appendix-D.04. Economics Impact Analysis. Table D.4-6. Page D-18.

- Currently employed support and service industry employees, such as those who work for food services, delivery services, cleaning services, printing services, advertising services, etc.

There are many other job creation estimate inconsistencies in the DEIS. In Section ES.4.3.1,[85]the number of jobs created by SCMagLev is given as 390-440. In Appendix G15[86] the employment range is 1,350-2,080.

The DEIS is deficient as it fails to provide the following information:

- Why are these discrepancies present in the various job estimates?
- What is the source of this apparent discrepancy?[87]

[85] DEIS Section ES.4.3.1, pg ES-15.
[86] DEIS Appendix G15, Table 1, page 2.
[87] Appendix - Reprint: Kowalski, M. "SC Maglev DEIS Part 2 – Detailed Comments – NO BUILD v4.0." 3031. Page 13.

11. Conclusion

In closing, we strongly support the “no build” option and the development of a Supplemental DEIS to address the missing and insufficient analysis of the impacts of the project.