United States Department of the Interior

OFFICE OF THE SECRETARY
Office of Environmental Policy and Compliance
5 Post Office Square, Suite 18011
Boston, Massachusetts 02109

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Brandon Bratcher
Federal Railroad Administration
United States Department of Transportation
RPD-13: Environmental and Corridor Planning Division
1200 New Jersey Ave. SE West Building
Mail Stop 20
Washington, DC 20590

Lauren A. Molesworth
Maryland Transit Administration
6 Saint Paul Street
Baltimore, MD 21202

RE: Draft Environmental Impact Statement
Draft Section 4(f) Evaluation
Baltimore-Washington Superconducting MAGLEV Project

Dear Mr. Bratcher and Ms. Molesworth:

The United States Department of the Interior (Department) has reviewed the January 22, 2021, Draft Environmental Impact Statement (DEIS) and Draft Section 4(f) Evaluation[1] for the proposed Baltimore-Washington Superconducting MAGLEV Project (SCMAGLEV), prepared by the Federal Railroad Administration (FRA), in coordination with the Maryland Department of Transportation's (MDOT) Maryland Transit Administration (MTA), and Baltimore-Washington Rapid Rail, LLC (BWRR) the project private sponsor, and submits the following comments on behalf of the National Park Service (NPS), the U.S. Fish and Wildlife Service (FWS), the U.S. Geological Survey (USGS), and the Office of Policy Analysis (PPA). Due to the potential effects to NPS and FWS managed lands and the need for the project to receive approvals from the NPS and, potentially, from the FWS, both bureaus have been identified as cooperating agencies and have coordinated closely with the FRA and MTA.

[1] Section 4(f) of the Department of Transportation Act of 1966 (Pub. L. 89-670, 80 Stat. 931).

The Department's comments focus on information gaps or other concerns with the DEIS. Among other needs, prior to issuing the Final EIS (FEIS), further analysis or information is required on the following:

- A primarily underground alternative to reduce impacts to the Baltimore-Washington Parkway and Patuxent Research Refuge (PRR or refuge);
- The rationale for eliminating from further analysis preliminary alternatives that were protective of Federal facilities;
- Evaluation and quantification of below-ground impacts;
- Potential effects on federally threatened and at-risk species;
- Potential impacts on environmental justice communities, including mitigation;
- Potential impacts from the proposed wind power projects, which could potentially provide energy for the MAGLEV project, once built;
- Visual impacts, including view points from multiple vantage points in different seasons and time of day, and with renderings from multiple vantage points;
- Adequately detailed cultural resources analysis;
- Impacts to NPS and FWS administered properties from projects currently underway or that will occur in the foreseeable future and the resulting combined impacts;
- Whether public transportation needs will already be met through the other existing and anticipated initiatives;
- A complete discussion of any requirements, federal actions, and information needs of each Bureau in order to adopt the FRA's FEIS for the proposed project, that would constitute a use of the BW Parkway or PRR that is inconsistent with the statutorily defined purposes of both the BW Parkway and PRR.

The above needs and others are presented in greater depth in the general and specific comments below, including appendices.

BACKGROUND

The SCMAGLEV Project includes two terminal stations (Washington, D.C. and Baltimore, MD) and one intermediate station at the Baltimore-Washington International Thurgood Marshall Airport (BWI Marshall Airport Station). The system requires additional facilities to operate including one trainset maintenance facility (TMF), two maintenance of way (MOW) facilities, and various smaller ancillary facilities. The ancillary facilities include fresh air and emergency egress (FA/EE) facilities, substations, SCMAGLEV wayside system facilities and stormwater management. The system proposes to operate on both underground (deep tunnel) and an elevated guideway (viaduct). Stations and ancillary facilities are generally above, below, or adjacent to the guideway and would provide for access to passenger and employee parking as applicable.

Alignments retained for further study by FRA, in addition to the No Build Alternative, are Build Alternative J (Baltimore-Washington Parkway (BWP Modified-East)) and Build Alternative J1 (BWP Modified-West). FRA does not identify a preferred alternative in the DEIS but has indicated that BWRR has identified its preferred configuration as Build Alternative J alignment, BARC West TMF, and Cherry Hill as the north terminus station (Build Alternative J-03).

Two large National parks (Baltimore-Washington Parkway and Greenbelt Park), 14 L'Enfant reservations and a National Wildlife Refuge (Patuxent Research Refuge) are located within the project area. Baltimore-Washington Parkway (BW Parkway) and Greenbelt Park are owned by the United States and are administered by the NPS and managed by National Capital Parks – East. The L'Enfant reservations are owned by the United States and are administered by the NPS and managed by the National Mall and Memorial Parks. The Patuxent Research Refuge is owned by the United States and administered by the FWS.

Build Alternative J directly affects the BW Parkway and the PRR while Build Alternative J1 directly affects the BW Parkway. The following discussion outlines the Department's concerns regarding the impacts that would occur from the proposed actions evaluated in the DEIS and the Draft Section 4(f) Evaluation. More detailed comments are provided in respective appendices.

THE BALTIMORE-WASHINGTON PARKWAY

The BW Parkway was established by Congress on August 3, 1950, Public Law 81-643, and opened in 1954. The 19-mile, 1472-acre scenic highway connects Baltimore, Maryland, and Washington, D.C., and was designed to blend with the natural topography and preserve a scenic, forested transportation corridor between Washington, D.C. and Baltimore, Maryland. It is one of four parkways in the nation's capital that integrates a majestic parkway design and serves as a scenic entry to the capital city. The BW Parkway was listed on the National Register of Historic Places in 1991. It is a cultural landscape, intended to retain a combination of thick woodland forest and grassy lawn within the median in accordance with the landscape standards of mid-20th century parkway construction. The native forests provide scenic views for visitors, including drivers and passengers, and serve as an increasingly important corridor for wildlife, from forest-dwelling species to migratory birds.

The BW Parkway exemplifies the last period of construction for this type of park and is the only fully developed parkway of its kind in Maryland. The enabling legislation cited above stipulates that the BW Parkway is to be considered an extension of the park system of the District of Columbia and its environs. Since the parkway opened in 1954, maintenance on road and park land has been aimed at the preservation of five aesthetic qualities with the objective of not only minimizing negative impacts, but also of enhancing parkway character wherever possible. Features to be preserved are right-of-way with heavy slope vegetation, opposing roadways separated by a variable-width median, curvilinear road alignments, stone-faced bridge abutments, and contour grading fit to the topography. It is a cultural landscape, intended to retain a combination of thick woodland forest and grassy lawn within the median in accordance with the landscape standards of mid-20th century parkway construction. The native forests provide scenic views for visitors, including drivers and passengers, and serve as an increasingly important corridor for wildlife, from forest-dwelling species to migratory birds. The BW Parkway includes a multitude of contributing elements of landscape architecture and approximately 125 contributing structures, including eighteen bridges and numerous culverts with decorated headwalls. The Baltimore-Washington Parkway is a Section 4(f) property that is both a significant park and a National Register-listed historic property[2].

[2] https://mht.maryland.gov/nr/NRDetail.aspx?NRID=1086

As noted above, both build alternatives occupy land within, and affect the BW Parkway to different extents. Permanent impacts to the BW Parkway are expected from the construction of the main alignment of the system, portals, installation of overhead electrical lines, road relocation, new road construction, viaduct, construction staging, and the location of the TMF, MOW facility and various other ancillary facilities.

The build alternatives' temporary impacts to the BW Parkway are primarily associated with the construction of the main alignment, relocation of powerlines and other system elements, viaduct work zone access road and TMF for the construction LOD.

This project, if implemented, has the potential to permanently affect over 88.87 acres and temporarily affect over 27.16 acres of the BW Parkway above ground for Build Alternative J and permanently affect over 52.71 acres and temporarily affect over 13.58 acres of the BW Parkway above ground for Build Alternative J1. The BWRR preferred alternative, alternative J-03, has the potential to impact over 67.38 acres and temporarily affect over 35.98 acres of the above ground portions of the BW Parkway. The total acreage of the BW Parkway being affected from each build alternative is unknown as the DEIS and Draft Section 4(f) does not quantify or evaluate the impacts of the SCMAGLEV where it is underground within the boundary of NPS lands. If the 831 acres referenced on table 4.3-2 (page 4.3-4) is intended to include underground impacts, then this project has the potential to affect over 56% of the total acreage of the BW Parkway. In addition, SCMAGLEV is above grade on viaduct either on or directly adjacent to the BW Parkway for 6-10 miles impacting the setting of the BW Parkway for 30 - 50% of its length.

The Department is concerned that despite close coordination with the NPS during the planning process, the DEIS and Draft Section 4(f) evaluation does not include the evaluation of previously discussed alternatives that avoid the effects to the BW Parkway. The NPS advocated for alternatives that avoid direct and indirect effects to the BW Parkway. Its enabling legislation justifies it as a major scenic artery within the park and parkway system of the nation's capital, as a formal entrance to the city of Washington, D.C., as a defense/military route among suburban federal installations and the city, and as a contributing element to the commercial and residential development of the Baltimore-Washington corridor. The parkway maintains the original integrity of setting, design and associations characteristic of the earliest parkways designed for pleasure motoring, the preservation of natural topography and vegetation for scenic purposes coupled with "high-speed" elements of modern freeway design. The decision to not include alternatives that avoid the BW Parkway preclude the project from complying with this enabling legislation.

The NPS Organic Act, as amended and supplemented, grants NPS authority to issue rights of way (ROW) across lands in the National Park System only for specified limited purposes, not including railroads. Certain parks have been granted additional authorities by Congress, but none appear to be relevant here. Even if authority to issue a ROW or some other form of approval were found, the NPS Organic Act requires the NPS to conserve park resources and values and to provide for their enjoyment "in such manner and by such means as will leave them unimpaired for the enjoyment of future generations" and prohibits it from authorizing any activities "in derogation of the values and purposes for which the System units have been established." 54 U.S.C. 100101. NPS thus may not authorize any activity that impairs park resources and values. This is a substantive limitation on the discretion of the NPS.

As is further described in NPS Management Policies 2006, Section 1.4.5[3], impacts are most likely to cause impairment when they harm resources or values that are necessary to fulfill specific purposes identified in a park unit's establishing legislation. As noted above, the BW Parkway's purpose as a suitable approach for passenger-vehicle traffic is one such core purpose, which the Secretary of the Interior (through NPS) is specifically directed not to impair, both by the Organic Act and the BW Parkway's legislation itself. The DEIS and Draft Section 4(f) Evaluation only include build alternatives that affect the BW Parkway. As indicated in the DEIS (4.7-9), impacts to the BW Parkway are considered difficult to mitigate due to the extensiveness of impact and the uniqueness of the park feature. Alternatives are needed that explore avoidance or significant minimization of impacts to NPS properties. Appendix F in the DEIS includes an evaluation of avoidance to Section 4(f) properties and concludes that true complete avoidance was not possible. There are alternatives that would greatly minimize the effect that were not considered. There is a reference to the Managed Lanes project in Appendix F that indicates that there will be a Section 4(f) use of the BW Parkway from that project. While that is correct, the NPS has worked with the Maryland Department of Transportation to develop alternatives that will significantly reduce the impacts.

In addition, further analysis of impacts to park resources is needed so that NPS has the information it needs to avoid impairment of those resources. Specifics are provided within the matrix attached (Appendix 1).

THE PATUXENT RESEARCH REFUGE

The U.S. Fish and Wildlife Service (FWS) was a Participating Agency at the start of the project's National Environmental Policy Act (NEPA) study and became a Cooperating Agency on May 17, 2018, when alternatives were reduced to Build Alternatives J and J1. The FWS has reviewed the Draft EIS and Draft Section 4(f) Evaluation and is providing the following comments in accordance with the National Wildlife Refuge System Administration Act of 1966 (16 U.S.C. 668dd *et seq.*), Section 7 of the Endangered Species Act (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*), and the Fish and Wildlife Coordination Act (48 Stat. 401; 16 U.S.C. 661 *et seq.*). Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*) and additional detailed comments are provided in the attached matrix (Appendix 2). Many of the detailed comments apply to multiple resource categories throughout the Draft EIS and Draft Section 4(f) Evaluation but are only listed once in the matrix to avoid repetition.

National Wildlife Refuge System Administration Act Comments

Patuxent Research Refuge refuge) is part of the National Wildlife Refuge System (NWRS) and was established by Executive Order in 1936 to serve as a wildlife experiment and research refuge. The refuge consists of 12,841 acres of managed and protected forest, meadow, and wetlands habitat, and contributes to one of the largest contiguous blocks of forested habitat in the mid-Atlantic coastal plain. The refuge is the nation's only National Wildlife Refuge having a research and wildlife conservation mission and its lands support innovative wildlife research and monitoring studies conducted by the United States Geological Survey Eastern Ecological Science Center at the Patuxent Research Refuge .

[3] https://www.nps.gov/policy/MP_2006.pdf

According to the Draft EIS, all six J Build Alternatives will impact up to 165 acres of the refuge and affect wildlife research, habitat function, and public use. Direct impacts include 23.5 acres of permanent impacts and 25.5 to 29.9 acres of temporary impacts depending on which project element alternatives are selected. Remaining impacts are indirect and associated with construction and operations-related disturbance. According to the DEIS, the six J1 Build Alternatives will not directly impact the refuge. The FWS is concerned that direct and indirect impacts may be underestimated due to a number of system variables, as articulated below.

Compatibility and Land Transfer Comments

Any proposed use of NWRS property by a third party must undergo a Compatibility Determination under 16 U.S.C 668dd and applicable FWS policy. The final rule for the NWRS' Compatibility Determination policy (FR Volume 65, No. 202 10/18/2000) states, *"Compatible use means a proposed or existing wildlife-dependent recreational use or any other use of a National Wildlife Refuge that, based on sound professional judgment, will not materially interfere with or detract from the fulfillment of the NWRS mission or the purpose(s) of the National Wildlife Refuge."* The FWS has not completed a Compatibility Determination for any of the J Build Alternatives, but given the impacts described in the Draft EIS to refuge habitats, refuge purpose, and NWRS mission, there remain significant concerns regarding the potential incompatibility of any of these alternatives with the purposes of the Patuxent Research Refuge or the NWRS (FWS matrix comment #: 1, 4, 13, 126, 127, 129).

Direct refuge impacts will occur within the refuge's North Tract. The North Tract was transferred to the refuge in 1991 as a result of the Military Construction Appropriations Act (Public Law 101-519). Public Law 101-519, § 126(c), 104 Stat. 2247 states *the Secretary of the Interior may not convey, lease, transfer, declare excess or surplus, or otherwise dispose of any portion of the property transferred unless approved by law.* This may preclude SCMAGLEV use of the North Tract since authorization to cross the North Tract may not be obtainable under present law. It is not clear if the refuge's South Tract will be directly impacted by the Beltsville Agricultural Research Center Airstrip train maintenance facility (TMF) site (FWS matrix comment #: 1, 3, 4, 111, 116, 126, 127, 129).

The FWS will continue to coordinate with FRA to evaluate possible project impacts to the refuge. FRA has not proposed a *de minimis* determination under Section 4(f), and the Service concurs that the only path forward for a project requiring use of refuge lands lies in establishing that there is: a) no feasible and prudent alternative and b) that all possible planning has been done to minimize harm to the refuge. The FWS is not yet able to concur with either determination. FRA should also be aware that even if it determines there is no feasible and prudent alternative to routing the project through the refuge and all possible planning to minimize harm has been undertaken, that significant legal barriers, as noted above, may remain for FWS to approve use of refuge lands for this project (FWS matrix comment #: 32, 34, 109, 128).

Natural Resource Comments

The full scope of refuge impacts has not been determined due to uncertainties with a "Rule of Particular Applicability or other procedural action that FRA may undertake concerning safety requirements for any new rail technology (DEIS page ES-2 et al.), which would apply in this case, as well as utility connections and conflicts, emergency vehicle access, siting of stormwater treatment facilities, and power generation and distribution requirements. In addition, FRA predicts noise impacts from SCMAGLEV operations will extend 2,100 feet from the elevated viaduct and 1/4-mile from the TMF. Therefore, potential direct and indirect impacts have not been adequately addressed and are likely underestimated in the Draft EIS (FWS matrix comment #: 4, 10, 15, 18, 19, 21, 22, 28, 35-47, 49-51, 85, 93, 103, 104, 126).

The FWS previously recommended a 300-foot buffer be applied to direct impacts to quantify edge effects to forest interior dwelling species (FIDS) habitat[4]. This is based on general guidance provided by the Maryland Department of Natural Resources Chesapeake Bay Critical Area Program for changes in land cover. FRA predicts noise impacts from SCMAGLEV operations will extend up to 2,100 feet from the elevated alignment and 1/4-mile from the TMF. These limits are specific for SCMAGLEV and should be used to quantify indirect impacts on FIDS habitat and other noise-sensitive lands and resources (FWS matrix comment #: 4, 28, 35, 43, 46, 93, 126).

Despite close coordination between the FWS and FRA and the Project Sponsor, there are significant information gaps concerning potential impacts to refuge land and resources. SCMAGLEV is a new technology in the U.S. but it has been in operation in Japan for 50 years. Environmental planning reports and resource impact studies from similar high-speed rail programs may help to inform this NEPA study and provide effective strategies to avoid and mitigate refuge impacts (FWS matrix comment #: 1, 9, 49, 100, 104, 105).

The Draft EIS recognizes the refuge as a "parkland of national significance" (DEIS page 4.5-11) and that impacts will be difficult to mitigate. The FWS agrees that these issues and resource impacts are substantive and recommends that additional alternatives (to include tunneling under the refuge) be evaluated. Tunneling will decrease surface land acquisition and resource impacts and, therefore, reduce time and cost to acquire and mitigate right-of-way impacts (FWS matrix comment #: 4, 8, 11, 14, 32, 97, 109, 126, 130).

Section 7 Endangered Species Act (ESA) Comments

Three federally threatened species, one candidate species, and two petitioned species may occur within the project action area.

The federally threatened swamp pink (*Helonias bullata*) occurs in the Stony Run watershed. Swamp pink is a perennial wildflower that inhabits a variety of freshwater wetlands, including spring seepages, swamps, bogs, wet meadows, and margins of small streams. Even if no direct

[4] Jones, C., McCann J., and McConville, S. 2000. A Guide to the Conservation of Forest Interior Dwelling Birds in the Chesapeake Bay Critical Area. Maryland Department of Natural Resources. (https://dnr.maryland.gov/education/Documents/tweetyjune_2000.pdf).

effects to potential swamp pink habitat are proposed, the project should be designed to minimize hydrological impacts to wetlands in the watershed. Increased siltation, stormwater runoff, and changes to surface or groundwater hydrology are major threats to wetlands and could indirectly affect swamp pink habitat (FWS matrix comment #: 78).

The federally threatened northern long-eared bat (NLEB; *Myotis septentrionalis*) may be present within the project action area. NLEB is a temperate, insectivorous migratory bat that hibernates in mines and caves during the winter and spends summers in wooded areas.

The Northern Long-Eared Bat Consultation and 4(d) Rule Consistency Determination Key for the SCMAGLEV project should be completed in IPaC as soon as possible to document the SCMAGLEV project is covered by the 4(d) rule (See also FWS matrix comment #: 98).

The federally threatened yellow lance (*Elliptio lanceolata*) may be present within the project action area. Yellow lance occurs in the upper Patuxent River watershed and there are historic records from near the refuge. The FWS recommends mussel surveys be conducted along the Patuxent River and Little Patuxent River to determine if yellow lance or other species of greatest conservation need are present within the project action area (FWS matrix comment #: 89, 92).

The monarch butterfly (*Danaus plexippus*) is present within the project action area. The FWS completed a species status assessment and designated the monarch butterfly as a candidate species in December 2020. Candidate species warrant ESA listing but are precluded from listing by other higher priority listing activities. Candidate species have no statutory protections under the ESA, but a species status review is required each year until the FWS undertakes a proposal to list or makes a not-warranted finding (FWS matrix comment #: 90).

The spotted turtle (*Clemmys guttata*) and wood turtle (*Glyptemys insculpta*) may be present within the project action area. Both species have been petitioned for Federal listing under the ESA and the FWS is conducting a species status assessment for each to determine if listing is warranted. Spotted turtles favor shallow-water, vegetated wetlands, but can also be found in upland areas and forest during their active season. Spotted turtles occur within the refuge and may be present in other suitable habitats off the refuge. Wood turtles occupy terrestrial and aquatic habitats but tend to stay near streams and creeks and are documented to occur along the project corridor (FWS matrix comment #: 91, 96).

GENERAL COMMENTS

- FRA has adopted a modified version of the Maryland Streamlined Environmental and Regulatory Process for this NEPA analysis, but the streamlined process and modifications have not been adequately described or referenced in the Draft EIS. Specifically, it is not clear what roles, responsibilities, and expectations participating and concurring agencies have within the streamlined process, and how the Preferred Alternative and Conceptual Mitigation milestone will be incorporated into the project NEPA schedule since the preferred alternative will not be identified until the Final EIS (FWS matrix comment # 6).

- Preliminary alternatives were eliminated based on impacts to existing and planned Amtrak Northeast Corridor and MARC infrastructure but not for statutorily protected Federal facilities, and without clearly stated rationale. Cost and time needed to secure the necessary rights-of-way across the BW Parkway and PRR, manage utility conflicts, and mitigate cultural and natural resources may make J and J1 alternatives more difficult to permit and less likely to be categorized as least harm. Moreover, SCMAGLEV will provide a rail transportation option between Baltimore, MD, and Washington DC, that, according to the DEIS, is expected to significantly divert ridership and scale back planning infrastructure improvements by Amtrak and MARC (see also PPA comments below and in Appendix 3). This raises the question of whether the eliminated preliminary alternatives may have been reasonable and prudent ways to minimize harm to NPS and FWS assets. The FRA paused the NEPA study in 2019 to reassess critical design elements, which resulted in changes to Alignments J and J1 and their respective ancillary and support facilities including train maintenance facility (TMF) and portal locations. However, it is unclear whether all preliminary alignments were reassessed as neither the DEIS nor the Section 4(f) Evaluation shows a reconsideration of any of the alternatives that were previously dropped. See also FWS matrix comment #11(Appendix 2) and NPS matrix (Appendix1).

  In addition, refined design elements were applied to Build Alternatives J and J1 in 2020, and substantially changed site locations and size requirements for alignments and support facilities. However, not all preliminary alternatives were updated with the design refinements and re-evaluated to determine alternatives retained for detailed analysis. We would appreciate knowing whether a supplemental review was performed to consider if design refinements substantially changed anticipated impacts for each preliminary alternative. See also FWS matrix comment #12.

- The DEIS currently does not include a complete discussion of each bureau's federal action that would be required to approve or authorize the project. For the bureaus to adopt the EIS, the document will need to include a complete discussion of each bureau's federal action, the purpose and need for such actions, and the authorities that would allow them to authorize or approve the project. It must also include the necessary information to allow each to make the findings required by the statutory structure governing each bureau's authorizations. We understand that FRA cannot be expected to know every agency's statutory authorities, and a number of our comments are intended to better explain the authorities under which the NPS and FWS would have to proceed. However, FRA must be aware at the general level that there may be no usable and practicable statutory authority under which NPS or FWS may approve or authorize the Project to cross the federal lands they manage.

- The NPS has its own wetland and floodplain evaluation requirements. For wetlands and floodplains that are impacted within NPS properties, a Statement of Findings by NPS per NPS Director's Order (DO) 77-1 and DO 77-2[5] would be required, and mitigation identified.

[5] https://www.nps.gov/policy/DOrders/Procedural_Manual_77-1_6-21-2016.pdf
https://www.nps.gov/policy/DOrders/DO_77-2.pdf

- Impacts to NPS and FWS resources, both direct and indirect, need to be identified for the specific NPS parkland and the FWS refuge by resource. Currently the DEIS presents impacts to resources, such as wetlands, by alternative. Resource impacts need to be provided by jurisdiction so that each jurisdiction has sufficient information regarding the resources being impacted that are under their administration.

- Below-ground impacts need to be quantified and evaluated in the impact analysis. While FRA has stated that Section 4(f) does not apply to underground uses, this is not the case, as federal agencies administer areas above and below ground within their boundaries. See also USGS comments on groundwater further below and in Appendix 4.

- Table 4.3-2 (page 4.3-4) references a total acreage of 831 acres of NPS land and 508 acres of FWS land that are expected to be affected by SCMAGLEV. The impact acreages provided in other sections of the DEIS do not equate to these numbers. It is unclear what these numbers represent.

- The DEIS includes plans to site stormwater facilities on NPS land; current documentation requires further clarification regarding PRR. NPS and FWS will generally not permit the use of their lands to allow others to meet their stormwater requirements. All stormwater facilities will need to be located off NPS and FWS lands for this project.

- The cultural resources analysis requires additional detail, as a complete inventory of resources has not been undertaken for either bureau beyond the general National Register of Historic Places nomination. There are a considerable number of contributing elements that are connected to the primary resource that could be impacted by the project.

- The DEIS analyzes viewsheds and visual impacts but excludes viewpoints from multiple vantage points, in winter and summer and during the day and at night. These should include renderings from a variety of sections along the above ground portion, to include the transition areas from underground to viaduct and crossing over existing facilities. Coordination with DOI bureaus is necessary to identify critical viewpoints that need to be analyzed.

- The DEIS and Draft Section 4(f) Evaluation does not evaluate impacts from projects currently underway or that will occur in the foreseeable future and the resulting impact of the combined actions on the BW Parkway and PRR. Most notably, the document does not consider the impacts of the I-495 & I-270 Managed Lanes Study, which intersects this project at I-495 where major changes are being anticipated in a location where this project is coming from deep tunnel to viaduct.

- The scope and magnitude of this project warrant additional economic analysis. Our review suggests that a sufficient level of analysis has not been conducted.

GROUND WATER RESOURCE IMPACTS

Proposed SCMAGLEV routes between Washington, D.C. and Baltimore, MD include significant tunneling through northwestern Anne Arundel and Prince George's Counties. Estimated tunnel lengths vary from 25-29 miles (depending on build alternative), at depths up to 320 feet, and a diameter of 50 feet. The project tunnel has the potential to significantly alter groundwater flow and affect public-supply wells. These impacts have not been evaluated in the DEIS, but will need to be included in the FEIS. Please see Appendix 4 (U.S. Geological Survey) for additional information.

IMPACTS TO ENVIRONMENTAL JUSTICE (EJ) COMMUNITIES, TRANSIT, AND MITIGATION STRATEGIES, ENERGY AND WIND POWER

The Department of the Interior Office of Policy Analysis has provided assistance in the Department's review of specific sections, or concerns with, the SCMAGLEV DEIS. Specific concerns requiring further information and clarification in the FEIS are summarized below and discussed in more depth in Appendix 3.

The following sections discuss a subset of issues and information needs to address potential inconsistencies with the stated Purpose and Need of the project. While the purpose of the DEIS is primarily to evaluate environmental impacts, the Department's analysis suggests that there are core issues that touch on the economic viability of the project and the extent to which a sufficient level of economic analysis has been done to support the project plan.

Summary

- The targeted nature of three stops for the SCMAGLEV Project limits its ability to meet the stated objectives to "Improve redundancy and mobility options for transportation between the metropolitan areas of Baltimore and Washington, D.C" and to "provide connectivity to existing transportation modes in the region (e.g., heavy rail, light rail, bus, air) (DEIS, ES-6).

- Specifically, the Project might disproportionately affect EJ communities to an extent that might not be avoided under Executive Order 12898 and USDOT's 2012 policy Order on EJ.[6] Although the reported rates of bus and rail diversion at SCMAGLEV's $60 per trip price point rely on favorable conditions that might not be realized, the projections and discussed mitigation would reduce access to public transportation for bus riders and users at other rail station points in the system, which is in contradiction to the stated objectives.

- The No Build Alternative mentions a number of initiatives focused on improving intercity passenger rail service, including improvements identified by FRA in the Northeast Corridor (NEC) FUTURE Record of Decision (ROD)[7] and New Acela 21

[6] https://www.transportation.gov/transportation-policy/environmental-justice/department-transportation-order-56102a
[7] https://www.fra.dot.gov/necfuture/pdfs/rod/rod.pdf

equipment, which will allow for top operating speeds of 160 mph. As such, the FEIS should further explore whether public transportation needs will be met through existing initiatives.

- The SCMAGLEV system and ancillary facilities will increase net transportation energy consumption by approximately 3.0 trillion British thermal units (Btus[8]). The energy intensity compares favorably to automobiles but unfavorably with existing bus and rail transportation. As expressed in the DEIS, SCMAGLEV operations could lead to power transmission congestion and higher electricity prices without significant upgrades to transmission infrastructure, which should be reflected and addressed.

- Appendix G describes a plan for the applicant to develop wind power as a clean/alternative energy source for the SCMAGLEV's formidable energy demands, although it is not mentioned in the body of the DEIS. Up to 1 GW worth of plans including tentative locations are included. The evaluation of the potential environmental impacts of these wind power projects, which are described as located on state-owned lands with resources managed in trust by the Maryland Department of Natural Resources (DNR), should be included in the FEIS.

- The extent of the potential mitigation needs and associated costs of the entire project appear substantial and could affect SCMAGLEV's viability.

Additional specific comments from NPS, FWS, PPA and USGS are provided in Appendices 1-4.

Thank you for the opportunity to provide input on the DEIS. We appreciate the close coordination with FRA and MTA and look forward to continuing communication and collaboration to resolve concerns and information needs. For additional assistance please contact: Tammy Stidham, National Park Service, Region 1 – National Capital Area, Deputy Associate Area Director, Lands and Planning at 202-438-0038 or tammy_stidham@nps.gov; Jennifer Greiner, Refuge Manager, Patuxent Research Refuge at 301-497-5582 or jennifer_greiner@fws.gov, and Raymond Li, Transportation Liaison with the Ecological Services Field Office at (410) 573-4522 or ray_li@fws.gov; Benjamin Simon, Assistant Director, Economics, PPA, at 202-208-4916 or benjamin_simon@ios.doi.gov, Jon Janowicz, USGS Manager for Environmental DocumentReviews, at (609) 771-3941 or at jjanowicz@usgs.gov. Please contact me at (617) 223-8565 if I can be of further assistance.

Sincerely,

ANDREW RADDANT
Digitally signed by ANDREW RADDANT
Date: 2021.05.28 09:11:54 -04'00'

Andrew L. Raddant
Regional Environmental Officer

[8] https://www.eia.gov/energyexplained/units-and-calculators/british-thermal-units.php

Attachments

CC:

David Valenstein, Federal Railroad Administration
Marlys Osterhues, Federal Railroad Administration
Jennifer Greiner, Refuge Manager, Patuxent Research Refuge, North Atlantic-Appalachian Regional Office
Sharon Marino, U.S. Fish and Wildlife Service, North Atlantic-Appalachian Regional Office
Scott Kahan, Refuge Chief, North Atlantic-Appalachian Regional Office
Anne Sittauer, Refuge Supervisor South Zone, North Atlantic-Appalachian Regional Office
Tom Wittig, U.S. Fish and Wildlife Service, North Atlantic-Appalachian Regional Office
Spencer Simon, U.S. Fish and Wildlife Service, North Atlantic-Appalachian Regional Office
Diane Opper, U.S. Fish and Wildlife Service, North Atlantic-Appalachian Regional Office
Genevieve LaRouche, U.S. Fish and Wildlife Service, Chesapeake Bay Field Office
Raymond Li, Transportation Liaison, U.S. Fish and Wildlife Ecological Services Field Office
Tammy Stidham, National Park Service, Region 1 – National Capital Area
Matt Carroll, Superintendent, Baltimore-Washington, Region 1 – National Capital Area
Michael Commission, National Park Service, Region 1 – National Capital Area
Jon Janowicz, U.S. Geological Survey, New Jersey Water Science Center

APPENDIX 1 NPS SPECIFIC COMMENTS			
	Chapter	**Section**	**Comment**
NPS	General	ES	FEIS needs to describe construction methods proposed to be used throughout the corridor. NPS saw one mention as use of the boring machine but also reference to cut and cover. There are increased impacts for cut and cover over the boring machine. Impacts associated with the construction method need to be identified and evaluated.
NPS	General		The United States owns the BW Parkway and the NPS administers the BW Parkway. NPS does not own the BW Parkway
NPS	General		The DEIS does not include information regarding the NPS Federal Lands to Parks Program (FLP), the NPS's oversight role to enforce deed restrictions in transferred parkland, nor the Federal government's reserved reversionary interest in certain local parks in the area of the SCMAGLEV project. The NPS FLP Program deeds former surplus Federal land to local government entities solely for public parks and recreation use in perpetuity under authority of 40 U.S.C. 550 (b) and (e). If transferred lands are not used accordingly or in the case of the SCMAGLEV project, they are needed for another purpose, the lands are subject to reversion back to federal ownership as stated in the property deeds. However, the NPS may consider other compliance remedies before exercising reversion.
NPS	General		Any impacts to FLP-transferred land will need to be mitigated. NPS would determine the mitigation measures in collaboration between the current owners of the properties and other agencies involved in the project, and the course of action would be subject to approval of the General Services Administration. The NPS is responsible for ensuring compliance and mitigation and amending the relevant property deeds if needed (See Federal Management Regulation 102-75.680 and 102-75.685).
NPS	General		Please identify the build alternative(s) that will avoid adverse effects to the National Historic Landmark[(s)] (NHL). If all adverse effects cannot be avoided, which alternative minimizes adverse impacts to the NHL(s)?
NPS	General		The DEIS does not discuss the interrelationship of this project with the I-495 / I-270 Managed Lanes project which is being proposed by the Federal Highway Administration and the Maryland Department of Transportation Maryland State Highway administration. As currently proposed the I-495 / I-270 Managed Lanes project would intersection with this project at the I-495 interchange with the BW Parkway. Proposed flyover ramps and their supporting piers are intended for the same areas in which planned SCMAGLEV underground tunnels will be constructed, potentially requiring changes to one or both projects, which is not considered in this DEIS.
NPS	ES	3.2.1	The statement under minimization & avoidance "locating the elevated guideway (viaduct) along or within existing transportation and utility corridors" is not an accurate characterization. The portion along NPS-

APPENDIX 1 NPS SPECIFIC COMMENTS			
	Chapter	**Section**	**Comment**
			administered BWP is through nationally important parkland, not an existing transportation corridor.
NPS	ES	4.3.1	pg. ES-12, It is not just the visual prominence but also the impact to vegetation and wildlife that impact the character of the Parkway.
NPS	ES	ES-14	Impacts to NPS-administered lands need to be separated from overall environmental impacts.
NPS	ES	ES-12	The viaduct is being described as being built up to 150-feet higher than the BW Parkway travel lanes. This means that the defined APE (described in Chapter 4.8) of 150' from the LOD line is insufficient to capture visual effects and perhaps noise effects. We note that the Area of Visual Effects defined in chapter 4.9 identifies a 2,000-foot distance from the LOD and the noise assessment in 4.17 suggests that in some areas of the viaduct, noise impacts could be heard up to 2,100-feet from the guideway. The APE needs to be re-evaluated for all sections of the above-ground track. Ideally the APE would be based on visual analysis that takes into account topography and tree cover. We cannot be sure that the identification of historic properties is complete without an accurate APE.
NPS	ES	ES.5	The SCMAGLEV facility cannot be authorized through the issuance of a NPS Special Use Permit. Either NPS would need to complete a land exchange under 54 U.S.C. 102901(b), or the project would need independent statutory authorization in order for the NPS to grant SCMAGLEV the authority to construct and operate facility. This includes both below ground tunnel operations that pass below NPS-administered park lands as well as above grade facilities.
NPS	Figure ES1.3-1		Map does not show the proposed locations of the stations.
NPS	ES	ES.3.2.1	Avoidance and Minimization: Design elements identified "Maximize use of underground guideway (deep tunnel)" and "Locating elevated guideway along or within existing transportation and utility corridors." In fact, these designs do not avoid or minimize impacts as the only above ground MAGLEV section is placed on a historic property and not placed underground as requested by multiple federal agencies including USFWS, NPS, USDA and others.
NPS	ES	ES.4.3.1 para 2	SCMAGLEV impacts do not identify impacts to BARC, Patuxent Research Refuge (PRR) and BW Parkway
NPS	ES	ES.4.3.1 para 8	"All Build Alternatives would likely impact historic..." The two build alternatives will adversely impact historic resources at BARC and BW Parkway.

APPENDIX 1 NPS SPECIFIC COMMENTS			
	Chapter	**Section**	**Comment**
NPS	ES	ES.7 para 2	"CEQ's NEPA regulations require a NEPA document to specify the alternative that is considered to be environmentally preferable...that would cause the least damage to the human and natural environments." In the DEIS the only environmentally preferable option is the No Build option. No options exist that would place the MAGLEV project entirely underground while on the BW Parkway, Beltsville Agriculture Research Center or Patuxent River Refuge.
NPS	ES	ES-22	The United States owns and NPS manages the property being impacted by this project. The paragraph on this page misrepresents NPS' interests. NPS requested the entire project be put in tunnel.
NPS		ES-25	The SCMAGLEV facility cannot be authorized through the issuance of a NPS Special Use Permit. Either NPS would need to complete a land exchange under 54 U.S.C. 102901(b) or the project would need independent statutory authorization in order for the NPS to grant SCMAGLEV the authority to construct and operate the facility. This includes both below ground tunnel operations that pass below NPS administered park lands as well as above grade facilities.
NPS	1	page one	List of cooperating agencies should be prominent. There are a lot of federal agencies and land holders involved in this project.
NPS	1	1.1	Last paragraph, first sentence: Does not reflect the input from the NPS.
NPS	1	1.3	Map does not show the boundaries of the NPS-administered properties.
	1	Table 1.2-1	The SCMAGLEV facility cannot be authorized through the issuance of a NPS Special Use Permit. Either NPS would need to complete a land exchange under 54 U.S.C. 102901(b) or 2) the project would need independent statutory authorization in order for the NPS to grant SCMAGLEV the authority to construct and operate the facility. This includes both below ground tunnel operations that pass below NPS administered park lands as well as above grade facilities.
NPS	2.2.4	2.11	Provide a reference to this information. It does not seem to be currently valid.
NPS	2	2.2.2	Studies cited in this section that highlight increasing demands on the transportation infrastructure do not reflect current trends towards increased telework. The 2014, 2015, 2016 and 2017 studies require updating to be relevant.
NPS	3		In order for NPS to adopt the document, please disclose the specific parcels and approximate acreage of NPS lands impacted. As written, NPS is unclear whether the NPS will be asked to issue a permit or whether a land exchange is expected.
NPS	3	3.1	SMAGLEV missing a "C"

APPENDIX 1 NPS SPECIFIC COMMENTS			
	Chapter	**Section**	**Comment**
	3	3-4	3.1.2 provides descriptions of the ancillary facilities but does not provide details associated with size and location for all facilities. For example, the size of the MOW facility that is associated with each TMF is not defined.
NPS	3	3-4	Explain when and how the decision was made to increase from 12 to 16 car train sets
	3	3.3.2	Pg. 3-12. There is a statement that reads, "Appropriate subsurface easements would be acquired for tunnel sections and underground facilities." For tunnel locations that are within the boundary of the BWP, NPS could not authorize via easement. Either NPS would need to complete a land exchange under 54 U.S.C. 102901(b) or the project would need independent statutory authorization in order for the NPS to grant SCMAGLEV the authority to construct and operate facility. This includes both below ground tunnel operations that pass below NPS administered park lands as well as above grade facilities.
NPS	3	Figure 3.4-1	BW Parkway boundary, and Greenbelt Park missing from map. Label for Greenbelt park is also missing
NPS	3	Figure 3.4-2	BW Parkway boundary and Greenbelt Park missing from map.
NPS	3	Figure 3.4-3	BW Parkway boundary and Greenbelt Park missing from map.
NPS	3	Figure 3.4-4	BW Parkway boundary and Greenbelt Park missing from map.
NPS	3	3.3.2.2	This section states that the preferred location for the Trainset Maintenance Facility is adjacent to the guideway and not at the end of the system. Please provide justification for this preference. No end of system alternative was evaluated for comparison and should have been included as an alternative for the TMF location for the public to understand the preference. A TMF at the end of the system would reduce impacts to BWP.
NPS	3	3.3.2.2	The text states that it is assumed that local utility providers have capacity to serve the TMF locations. This should be determined in advance of the FEIS release as the impacts associated with new utilities should be incorporated into the impacts from the project.
NPS	3	3.3.2.2	Page 3-19 calls for a 600-space employee parking facility at the TMF. This is a large number of spaces and new traffic would be headed to this facility. What is the need for these spaces?
NPS	3	3.3.2.2	For TMF alternatives (2 options) that cross over the BWP - specify height of facility over the parkway and to what extent (how many miles or feet) the parkway would be crossed. Also, previous text indicated that each TMF has an associated MOW facility but there is no reference to that in this section.
NPS	3	3.3.2.3	Can the MOW facilities be located at the end of the system?

APPENDIX 1 NPS SPECIFIC COMMENTS			
	Chapter	**Section**	**Comment**
NPS	3	Table 3.4-4	Chinatown Park is an NPS reservation. (Reservation 72) What access is anticipated there? What is the impact to the reservation? DEIS is lacking information on the 14 reservations that will be impacted by a tunnel.
NPS	3	3.3.2.6	No commercial vehicles or vehicles carrying hazardous materials are allowed on the BWP. Service to any MAGLEV facilities will not be able to use the BWP to access them.
	3	Pg 3.33	FA/EE – which of these require land from the BW Parkway?
	3	Pg 3.34	Substations – which of these require land from the BW Parkway?
	3	Pg 3.35	NPS does not have authority to authorize underground natural gas lines within the BW Parkway. Gas lines would need to be routed around the BW Parkway and not through it.
NPS	3	3.3.2.7	Operations, Signals, and Communications Facilities - where are these located along the system?
NPS	3	3.3.2.8	Why the decision to have 16 car trainsets instead of 12? Is there a ridership study that supports this?
NPS	3	3.3.2.9	Any existing utilities corridors on or below NPS property are there through existing ROW permits. Any relocation of these utilities on NPS lands would require new ROW permits authorized by the NPS. NPS suggests MAGLEV work to relocate off park property.
NPS	3	3.3.2.9	Where are the impacts to NPS' BWP from utility relocation captured?
NPS	3	Table 3.4-7	Are the impacts to NPS' BWP from roadway relocation captured? Where are the effects to traffic analyzed from these changes? Who are the owners of these facilities (who has authorized the changes) and what process has been undergone to evaluate and authorize the changes?
NPS	3	Table 3.4-8	NPS does not generally permit the use of its lands to allow others to meet their stormwater requirements.
NPS	3	3.3.12	NPS roads cannot be used as part of the haul route for construction material and debris. Commercial and construction vehicles are not authorized on park roads. Haul routes should be preliminary, defined in the FEIS as impacts associated with that use and need to be evaluated.
NPS	3	3.4.1	Based on the language in the document to this point - there is no explanation why any portion of the route has to be carried by a viaduct. The entire project could remain underground rather than being exposed along the route of the Baltimore Washington Parkway.
NPS	3	Table 3.4-2	BWP is common to all routes; add to column.
NPS	3	Table 3.4-7	Are the impacts to the access and egress to NPS’ BWP from roadway relocation captured? The removal of these routes will impact motorists.

APPENDIX 1 NPS SPECIFIC COMMENTS			
	Chapter	**Section**	**Comment**
NPS	3	3.2.1	How many ancillary facilities will be located on BARC, NPS and USFWS property and what are the specific locations? FA/EE locations have the potential to have a large impact at each location.
NPS	3	3.3.1.1	An interchange project at Powder Mill Road adjacent to BARC is proposed and would need to be deconflicted with the proposed Bureau of Engraving and Printing project on BARC.
NPS	3	3.3.2 para 7	The DEIS states, "Property would be permanently acquired (or use easements) for above-ground elements of the SCMAGLEV system, including viaduct and tunnel portal sections of the alignment, stations, TMF, and other facilities, and additional temporary acquisitions or easements may be required to facilitate construction." The FEIS needs to include all the federal actions that would be required by the NPS to include any land acquisition and how it would be acquired.
NPS	3	3.3.2.5	The FA/EE is described as being approximately 50 feet above ground and requires access roads and perimeter fencing. What specific locations have been identified on federal property? What visual and natural impacts would occur?
NPS	3	3.3.2.6	Electrical service is described as connecting to existing facilities in the vicinity of MD 197. Will this be an above ground transmission line? What are the visual and natural resource impacts? This section also identifies the need for five, seven-acre substations along the mainline. Where are these located on federal lands? Will they require above or below ground connections to the viaduct? What are the visual and natural resource impacts in each area?
NPS	3	3.3.2.8	Service is described as 24 hours a day, 7 days a week operation. Please describe the impacts of the train itself. Will the train be illuminated or have headlights? What is the power of the lights? What surface noise level will occur as the train passes, both above and below ground near the FA/EEs and portals?
NPS	3	3.3.2.9	This section describes the relocation of major utilities along major exiting utility corridors. Depending on the alignment selected, up to four relocations may be required along the BWP. The FEIS should provide additional details on each relocation area to assess actual impacts on federal properties. Visual and natural resources impacts will likely occur and plans to minimize these impacts should also be described.
NPS	3	3.3.2.10	This section describes the permanent relocation of public roadways required for the project. Depending on the alignment selected, up to three relocations will be required on the BWP. The FEIS should provide additional details and design drawings for each relocation area to assess actual impacts to the BWP and general public. Visual, infrastructure and natural resources impacts will likely occur and plans to minimize these impacts should also be described. In addition,

APPENDIX 1 NPS SPECIFIC COMMENTS			
	Chapter	**Section**	**Comment**
			a proposed transportation project at Powder Mill Road may be adversely affected by this project.
NPS	3	3.3.2.11	Stormwater management is proposed at two locations on/along the BWP. Depending on the alignment, up to 25 or 42 acres of land will be affected. NPS does not generally permit the use of its lands to allow others to meet their stormwater requirements.
NPS	3	p. 3-1	FRA "did not include the evaluation of other transportation modes for the Build Alternatives because modes other than SCMAGLEV technology would not achieve the SCMAGLEV Project Purpose and Need." This is not convincing as the arguments outlining the purpose and need are so general that construction of an alternate road, expansion of existing rail lines, or development of other commuting incentives, for example, could all achieve the same goal of improving the transportation network and reducing travel times.
NPS	4	General	In order for the NPS to be able to adopt the FEIS for their required federal decision making, impacts to NPS resources, both direct and indirect, need to be evaluated specifically for the NPS unit that is being impacted. This should be done in terms of quantifiable data whenever possible (i.e., miles, acres, square feet, number of trees, number and types of wetlands (we have our own wetland mitigation requirements so breaking out wetland impacts located within NPS administered property is critical)). Also, there are maps, but there is a lack of good focused mapping that clearly shows land ownership or property use and limits of disturbance. The maps included in this document are mostly at a scale that makes it difficult to interpret. The haul route maps provided in D-21 are not legible.
	4	Pg 4.1-6	The use of the BW Parkway for commercial or construction vehicles is not permitted because the parkway is owned by the United States and administered by the NPS as stated. This is required by regulation 36 CFR 5.6.
NPS	4	4.02 - Transpo rtation	Summary of impacts and alternatives needs to be included in the FEIS instead of solely in appendix D2. The analysis can stay in the appendix but needs to be summarized in the FEIS itself. In addition, impacts for above ground and below ground need to be identified. It is unclear what impacts are above vs. below. All below ground impacts need to be included as NPS administration continues below the surface.

APPENDIX 1 NPS SPECIFIC COMMENTS			
	Chapter	**Section**	**Comment**
NPS	4	4.2.11.4	Preliminary estimates of approximately 400 to 500 vehicle arrivals and departures (employees to the MAGLEV system and visitors) on a daily basis at each of the TMF Alternatives which would occur during the AM peak and the PM peak periods. This is 400 - 500 new trips within the corridor that currently do not exist. To mitigate the effects, the DEIS states that coordination efforts between the Project Sponsor and MDOT SHA, and Anne Arundel County or Prince George's County will be required to develop specific mitigation requirements for traffic impacts associated with the different TMF Alternatives. Many other entities will need coordination to include the NPS and MWCOG to see the effects and how to mitigate them on roadways near the TMF. NPS did not see effects from these using the MWCOG model to forecast the increase and potential associated issues.
NPS	4	4.3.3.1 - Table 4.3-1	Break out federal property by jurisdiction.
NPS	4	4.3	Acres of Impact need to be evaluated specifically and separately for NPS lands, separately for viaduct, staging, property impacts, land type, etc. Also, there is a need to identify and evaluate the impacts for NPS lands for all the ancillary facilities in addition to the alignment, stations, TMF, etc.
NPS	4	Table 4.3-2	This table identifies 831 acres of impact to the NPS. Clarification is needed regarding permanent vs. temporary, above vs below ground, and by facility type of the project.
NPS	4	4.3.4.2	Impacts to both above ground and below ground within the boundary of NPS properties will need to be defined and analyzed as changes of land use whether above or below ground. NPS would need to complete a land exchange under 54 U.S.C. 102901(b) or the project would need independent statutory authority in order for the NPS to grant SCMAGLEV the authority to construct and operate the facility. This includes both below ground tunnel operations that pass below NPS administered park lands as well as above grade facilities.
NPS	4	4.3.4.3	Outline short term construction staging impacts on NPS lands specifically and separately.
	4	4.3-12	States that build alternatives J-01 through J-06 would permanently impact up to 328 acres and temporarily impact up to 120 acres of federal land but in table 4.3-2 for NPS alone the acreage of impact was 831. These numbers are not in agreement.?
NPS	4	Table 4.3-4	This table needs to break out the acreages impacted by federal facility. Without that breakdown, it is not clear how each alternative is affecting each property.

APPENDIX 1 NPS SPECIFIC COMMENTS			
	Chapter	**Section**	**Comment**
NPS	4	4.3.5	This section lists as a minimization measure to surface properties that viaducts are located parallel to existing transportation corridors to minimize the effects. The BW Parkway is an extension of the park system of the District of Columbia and its environs and should not be considered a transportation corridor. The BW Parkway enabling legislation is clear about the purpose of parkway and the responsibilities of the Secretary. P.L. 81-643.
NPS	4	4.3.5	Mitigation measures for impacts to NPS resources are not discussed in this section. The project sponsor will need to coordinate with the NPS to discuss mitigation for any NPS resources. The State of Maryland does not have authority over NPS resources and cannot select mitigation for NPS resources. No discussions regarding mitigation have occurred for NPS resources to date.
NPS	4	4.3.5.1	Mitigation measures for short term construction strategies have not been discussed with NPS to date.
NPS	4	4.7.4.2	pg. 4.7-9. What are the impacts to NPS-administered lands from utility relocation?
NPS	4	4.7.4	Greenbelt Historic District is an NHL and consultation under Section 110(f) is required.
NPS	4	4.7.5	Specifically, identify specific impacts to NPS parkland for short term construction effects.
NPS	4	4.7.6	Mitigation measures have not been discussed with the NPS to date.
NPS	4	pg. 4.7-10	Confirm that no stormwater management facilities are on NPS lands. Table 3.4-8 references several BWP interchanges that will have BMPs.
NPS	4		The cultural resource affected environment and environmental consequences are deficient. Section 4.8, just states, in a matrix, the BW Parkway is on the NRHP, and that all the J alignments would impact it. One must then read Appendix D 08 to learn what the actual impacts are, which reads, "Possible visual, noise, vibration, and physical effects because of portal and transition portal hood, road relocation and reconstruction, permanent access road, viaduct, SCMAGLEV systems, overhead electric, FA/EE, and stormwater management." Stating that these impacts are "Possible" minimizes what the impacts will actually be. This project will be directly impacting almost a third of the parkway's entire length. The extent of those impacts is not discussed.

APPENDIX 1 NPS SPECIFIC COMMENTS			
	Chapter	**Section**	**Comment**
NPS	4	Table 4.8-1	BW Parkway is on the National Register for transportation and for landscape architecture. Not just transportation as noted in this chart. There are over 125 contributing structures, including 11 bridges and numerous culverts with decorated headwalls. The BW Parkway exemplifies the last period of construction for this type of road, and it is the only fully developed parkway of its kind in Maryland. It achieves extraordinary significance under criteria G as a contributing element to the national capital park and parkway system developed during the first half of the twentieth century. The parkway maintains original integrity of setting, design and associations characteristic of the earliest parkways designed for pleasure motoring--the preservation of natural topography and vegetation for scenic purposes coupled with "high-speed" elements of modern freeway design.
NPS	4	4.9	There is only one rendering that is looking from the BW Parkway to the elevated rail infrastructure. That rendering was created to look like summer when the trees are full of leaves, and truly minimized the visual impact of the view from the parkway. Include additional renderings at various viewpoints along the parkway and include renderings that are with leaf off and at night. This will require further coordination with NPS to develop a list of viewpoints that need to be evaluated. Viewpoints need to be at a variety of sections along the above ground portion (including the transition areas), vantage points should be in both directions and from both sides of the parkway. There were renderings presented at a May 2019 Section 4(f) workshop that gave a more realistic look at how this will impact the parkway aesthetics. These were not included in the DEIS. Also, this is the only rendering from the BWP. Quantify, in miles, how much this will parallel the parkway above ground. Why not show the renderings that were presented in the May 2019 Section 4(f) workshop?
NPS	4	4.10	Specifically, identify specific areas of impacts for all water resources (by resource) including water resources on NPS lands. Areas need to be defined and acreages provided. For wetlands and floodplains that are impacted within NPS properties, a Statement of Findings per DO 77-1 and DO-77-2 would be required, and mitigation identified. A table is needed that breaks out the impacts for NPS resources.
NPS	4	4.11	Specifically, identify specific areas of impacts for all wetlands on NPS lands. Areas need to be defined and acreages provided. For wetlands and floodplains that are impacted within NPS properties, a Statement of Findings per DO 77-1 and DO-77-2 would be required, and mitigation identified. A table is needed that breaks out the impacts for NPS resources.

APPENDIX 1 NPS SPECIFIC COMMENTS			
	Chapter	**Section**	**Comment**
NPS		4.12	Specifically, identify specific areas of impacts for all ecological resources that are on NPS lands. Areas need to be defined and acreages provided. A table is needed that breaks out the impacts for NPS resources.
NPS	4.12.3.1	5	MDNR identifies mesic mixed hardwood and Coastal Plain oak-pine forests as the primary forested wildlife habitats within the SCMAGLEV Project Affected Environment. NPS Vegetation Map goes down to the association level.
NPS	4.12		MD Forest Compensation Areas provide compliance with the Maryland Forest Conservation Act and are under permanent protective easement - how can these be considered as part of this project?
NPS	4.12	7	Species list is not complete.
NPS	4.12	8	A thorough species inventory has not been completed for the Baltimore Washington Parkway. This area may include many of the threatened species listed for Patuxent.
NPS	4.12	11	The effect of increased light pollution due to the proposed project needs to be considered.
NPS	4.12	16	There has not been a thorough bat inventory of BW Parkway. The roosting areas for rare bat species have not been considered. Consultation with FWS is required.
NPS	4.12	20	Time of year restrictions need to be accounted for in tree removal per the Migratory Bird Treaty Act.
NPS	4.12	21	CAC Site Design Guidelines should include a minimum of 5 years of invasive plant treatment (multiple treatments withing the growing season).
NPS	4.12	21	Bat inventories should be more comprehensive to include all declining bat species such as tricolored, Indiana, big brown, and little brown.
NPS	4.12	21	Seep and springs should be added to the list of surveys to aid in identifying feasible avoidance, minimization, and mitigation measures.
NPS	4.12	22	All tree-planting projects must include at least 5 years of invasive plant treatment conducted several times throughout the growing season and removal of all tree infrastructure post monitoring.
NPS	4.12	22	Coordination with all agencies to identify ecological restoration priorities.
NPS	4	4.13	In light of the recent significant paleontological finds located near to the LOD, please provide greater detail on how this work will be done while still being in compliance with 16 U.S. Code (U.S.C.) § 470aaa.
NPS	4	4.14	Specifically, identify specific areas of impacts for all soils and farmlands that are on NPS lands. Areas need to be defined and

APPENDIX 1 NPS SPECIFIC COMMENTS			
	Chapter	**Section**	**Comment**
			acreages provided. A table is needed that breaks out the impacts for NPS resources.
NPS	4	Table 4.8.2	Are any of the sites located within NPS property?
NPS	4	4.9-1	Why isn't the Baltimore-Washington Parkway identified as a Common Aesthetic Area on the map or in the analysis?
NPS	4	4.9-4	For the reader render the viaducts crossing the parkway rather than an image adjacent to the corridor.
NPS	4.8	4.8.1	Please add a paragraph summarizing the agency's responsibilities under Section 110(f) of the NHPA regarding NHLs.
NPS	4.8.3		Is the 150-foot APE based on real-life experience with SCMAGLEV systems in place in other countries?
NPS	4	4.20.4.1	Utilities relocated on NPS administered lands will need both a Special Use Permit for the actual relocation, and a Right-of-Way Permit for their use and occupation of park land. Unless handled in detailed within the FEIS, these utility relocations may need their own compliance review. The NPS preference is to relocate these utilities off of park land or underground which would also require a permit.
NPS	4.1.1.	4.1-1	If the route can be tunneled UNDER the Anacostia River, it's still not clear why a viaduct is required in both Build Alternatives. This should be made clear in the document.
NPS	Figure 4.9-5		How will the viaduct look in areas with less vegetation or in winter or where it crosses road? What about the ramps?
NPS	5	Table 5.4-1 - description of DOI and NPS	Second half of paragraph: This is not being met. There is no quantifiable breakdown of impacts to NPS property; there is no discussion in the alternatives chapter on what permitting or decision making would be required of NPS; nor has there been any considerable discussion on what the cumulative impacts of this project would add to in light of the I-495 Managed Lanes study, which this project would add to.
NPS	Appendix C	pg. 1-5	"fewer impacts on park" Please specify fewer than what for which parks? Alternatives J and J1 have significant impacts to NPS's BWP while the alternatives dismissed had little or no impact to BWP.
NPS	Appendix D.01	page 0-4	The NPS cannot authorize this project with a Special Use Permit or a Right-of-Way Permit. See comment above.
NPS	Appendix D.08	p. D.8-24, D.8-28	Why is the permanent impact to BW Parkway listed as simply "possible" when throughout earlier sections of report there is acknowledgement that the viaduct will impact the scenic viewshed due to high visibility and the limited screening options?
NPS	Appendix D.08	D.8-36	Why is the permanent impact to BW Parkway from the MD198 and BARC West TMF ramps listed as "possible" but the BARC Airfield TMC not qualified by possible?

APPENDIX 1 NPS SPECIFIC COMMENTS			
	Chapter	**Section**	**Comment**
NPS	Appendix D.08	D.8.6	Missing description of BW Parkway in Above-Ground Historic Property Descriptions.
NPS	Appendix D.08		There is no clear mapping of the locations of each known historic property. This makes it difficult to understand the potential effects and impacts to each resource. Visualizations for the impacts to the Greenbelt NHL district from Build Alternative J1 are lacking. It is difficult to determine which portions of the portal and viaduct and associated features would be built within and adjacent to the Greenbelt NHL district.
NPS	4.8 & App. D.8		Please note and assess impacts to two additional National Historic Landmarks that appear to be in the vicinity: the Spacecraft Magnetic Test Facility at Goddard Space Flight Center (off Good Luck Road) and Montpelier (a.k.a. Snowden-Long House) on Muirkirk Road in Laurel.
NPS	Appendix D.08	D.8.1	Why is the Baltimore Washington Parkway description excluded?
NPS	Appendix F	general	All descriptions of impacts in the Section 4(f) need to include the below grade acreages.
NPS	Appendix F	F-4	Section 1.2.5 In this section the DEIS states that FRA has determined that Section 4(f) does not apply to below grade portions of the facility because maintenance access to the tunnel is not required. Regardless of the need for access, FRA would need to acquire use of the land below the ground which is NPS-administered land. Therefore, even where the facility is in tunnel, it is a Section 4(f) property use and needs to be quantified and impacts analyzed.
NPS	Appendix F	F-14	The is a reference to the I-495 Managed Lanes project that concludes that the plan will result in a Section 4(f) use of the BW Parkway. The NPS has worked with MDOT to significantly reduce the impacts to the BW Parkway by that project.
NPS	Appendix F	Table F-2	This table says 180 acres for the TMF, but Table 3.3-1 in Chapter 3 says 175 acres and Chapter 3 section 3.4.2.2 says 170 acres; be consistent.
NPS	Appendix F	F-46	NPS does not generally permit the use of its lands to allow others to meet their stormwater requirements. FRA will need to locate any stormwater facilities required by the project to be within right-of-way owned and managed by the other of the MAGLEV facility. Please change throughout document.
NPS	Appendix F	F-42	This Section states that J would permanently incorporate 88.87 acres of BW Parkway property. What portion of this is underground? Both above ground and below ground areas have to be quantified and evaluated. Paragraph below this one is the first instance where the acreages by facility are mentioned anywhere. This paragraph needs to include the below grade acreages. Elsewhere in the DEIS, NPS

APPENDIX 1 NPS SPECIFIC COMMENTS			
	Chapter	**Section**	**Comment**
			impacts were defined as 831 acres. None of the impacts in this section add up to 831 acres.
NPS	Appendix F	F-46	A potential avoidance alternative that was suggested by NPS during the course of coordination was to tunnel the entire project. This would not completely avoid the use of the Parkway as it would require the acquisition of land for the tunnel below NPS property, but it would avoid the all above ground impacts which would be more significant. This is not mentioned as an avoidance alternative.
NPS	Appendix F	F-64	If the tunnel is going under the L'Enfant Plan reservation, it would be a permanent use of NPS land. The construction impacts are a temporary use. Acquisition of the below ground portion would be required and an SUP for the construction (not a temporary easement as stated in the DEIS).
NPS	Appendix F	F-81	Apply same comments in this section as mentioned above for parks section to include use and impacts.
NPS	Appendix F	1.1	This is an appendix, not a technical report. Also, add the contents of the attachments in the table of contents.
NPS	Appendix F-Coordination Correspondence	General	Remove all names of specific staff members related to specific comments, e.g. pg. 12 Viewshed "Chris Guy indicated., Tammy Stidham stated."
NPS	ES-15	Resource Impacts	Bullet #2 – acknowledge that the visual prominence of the viaduct is likely to alter the historic character and setting of some historic resources.
NPS	ES-13	Methodology	Please explain this sentence further: “Impacts occur within the limits of operational/physical disturbance” Does this statement mean that the impacts evaluated in this DEIS only occur within the project’s limits of disturbance? This conflicts with the method described earlier in this paragraph which states that the geographic areas of study for each resource topic were customized to fit the nature of the potential impacts. Impacts will extend beyond the project limits.
NPS	Executive Summary	ES.3.2.1	This section describes how the sponsor attempted to avoid or minimize impacts during conceptual design. Throughout the process the National Park Service has articulated the need to locate alignments off NPS property or underground to avoid impacts to a nationally significant historic property. While the sponsor has moved most areas for J and J1 underground, the only above-ground sections were placed on or alongside the BW Parkway. NPS has described negative impacts of this design throughout our consultations but no options

APPENDIX 1 NPS SPECIFIC COMMENTS			
	Chapter	**Section**	**Comment**
			exist for sub-surface design along the parkway. This will likely influence the agency's ability to approve the project moving forward.
NPS	Executive Summary	ES.4.3.1 Resource Impacts	Visual prominence of the SCMAGLEV viaduct are not the only visual impacts on BWP. Many other support facilities impacts that include Trainset Maintenance Facilities, Maintenance of Way Facilities, Signal and Communications and Power Facilities have not been quantified and will be placed on or along the BWP.
NPS	3	3.3.2.6	Impacts of the Power Substation at MD 197 have not been described. The addition of overhead power lines on poles or towers along with transformers has the potential to have a large visual impact, especially during fall and winter months where foliage screening is not an option. Describe actions to be taken in a low-visibility area.
NPS	3	Table 3.4-6	MAJOR utility relocations are described at significant interchanges at MD 197, MD 198 and MD 32 where existing lines will be relocated or raised. This will increase visual impacts on BWP.
NPS	3		3-17, "generally follow the west side of the BWP travel lanes on viaduct" and also through Federal lands including the BWP.
NPS	3	Table 3.4-7	Roadway redesigns are identified on NPS lands including Springfield Road, Explorer Road and Powder Mill Road interchange ramps. Each proposal will require an NPS permit and no consultation has occurred yet. In addition, The Beltsville Agriculture Research Center has initiated ramp redesign planning for an upcoming project on BARC. Has MAGLEV coordinated their proposed design?
NPS	3	Table 3.4-8	No stormwater management designs will be authorized on NPS lands. All locations must be off park property.
NPS	3	3.4	Details provided about the proposed project in a previous version of the DEIS have been removed. NPS had previously provided a large number of comments for this specific section. All details have since been removed without feedback or response to comments on the issues raised. How will the FEIS address these significant comments.

APPENDIX 1 NPS SPECIFIC COMMENTS			
	Chapter	**Section**	**Comment**
NPS	4	4.7.4.2	The DEIS states, "Build Alternatives J would permanently impact to two park resources, BWP and PRR." The DEIS also states that impacts would be difficult to mitigate. The document further describes the impacts of the current design. This should have prompted the design team to further modify the design to minimize or eliminate impacts. The impacts described in the document limits agency options to issue permits to proceed with the project.
NPS	ES-13		Greenbelt NHL is a 4(f) property thus DOI/NPS is an official with jurisdiction and thus must weigh in on any 4(f) finding.
NPS	App. G.2	Sheet 6A	Shows portal/transition to elevated guideway for Alt. J1-01 – It appears that the portal is within the Greenbelt NHL. How many acres and what is on those acres currently? How visible will the portal and elevated guideway be from locations in the NHL? Also, will noise and vibration affect the NHL? Also shows stormwater management facilities – how much acreage is in the NHL, what's the configuration? What other temporary or permanent impacts will there be to the NHL? Some of these are likely adverse effects (under Section 106) and should be avoided to preserve the NHL district.
NPS	App.G.2	Sheet 7	What is the height of the elevated guideway/viaduct in the vicinity of the 110-acre Montpelier NHL? Will it be visible? Depending on visibility and location, this could be a major visual intrusion. More visual analysis is necessary.
NPS	App.G	Project sheets	Need boundaries of historic properties drawn on the project concept plans so the proximity and overlap of project elements can be visualized.
NPS	Table 3.4-7	Public Rd changes	Alt. J – includes alterations to Explorer Road ramps to and from the BW Parkway requiring raising the elevation of the ramps by 7 feet. What impacts does this have on the adjacent properties? Are there other facilities/features that must be built – retaining walls, berms, re-grading of land farther from the ramps?
NPS	4.8-4		Indicates that the Programmatic Agreement will contain stipulations for revising the APE if designs continue to be refined. NPS believes that the established APE was incorrectly established since it ignores the likely visual effects of the extremely tall structure (the viaduct) on far distant historic properties. Since we know generally the height of the viaduct at this stage, the APE should be corrected, and all historic properties identified before a decision is made on a preferred alternative.
NPS	Chapter 3		Please demonstrate how impacts to cultural resources were factored into the alternatives development process.

APPENDIX 1 NPS SPECIFIC COMMENTS			
	Chapter	**Section**	**Comment**
NPS	App. D.6.1.1.2	Visual analysis	It appears that a 2,000-foot viewshed from all proposed facilities was used both as the defined Affected Environment for NEPA analysis for all resources (other than Cultural Resources) as well as for the Area of Visual Effects (AVE). Why wasn't this used to assess visual effects on cultural resources as well? The AVE analysis took into account "historic sites" and "sensitive viewsheds" which seem like they would apply to cultural resources as well. Why was the BW Parkway itself not identified as a "Common Aesthetic Area" - it is a designed landscape intended to present a continuous experience for the motorist throughout the corridor.
NPS	Appendix F – Draft Section 4(f) Evaluation	MethodologyF. 4.1	As with the visual and noise analysis, we do not agree that the 4(f) analysis should use the very narrow APE as its project area boundary for analyzing impacts to historic 4(f) properties rather than the more expansive noise analysis boundary used for all other 4(f) properties. This implies that historic 4(f) properties can't be impacted by noise and visual intrusions the same way parks and other federal lands can.
NPS	Appendix F	Page F-39	Mentions coordination with City of Greenbelt regarding the minimization of impacts to the historic/park property (Greenbelt Forest Preserve). The NPS – NHL Program should also be consulted as an official with jurisdiction according to: FHWA | Environmental Review Toolkit | Section 4(f) Legislation (dot.gov) (See sections 1.2.2) In addition, the MD SHPO and ACHP should also be consulted as officials with jurisdiction.

APPENDIX 2 – FWS SPECIFIC COMMENT MATRIX			
ID#	**Section**	**Page**	**Comment**
1	ES.4.3.2	ES-21	In addition to relevant regulatory agencies, FRA will also need to continue coordination with Federal landowning agencies impacted by the SCMAGLEV project.
2	ES.4.3.2	ES-23	Table ES4.3-3: Title should clarify table. It only reports direct impacts and does not include indirect impacts.
3	ES.5	ES-25	Table ES5.0-1: Add FWS as a landowning agency requiring a Congressional Act to authorize agency action.
4	ES.7	ES-26	Full scope of J-03 and all other Build Alternative impacts have not yet been determined due to uncertainties with Rule of Particular Applicability, utility connections and conflicts, emergency vehicle access, stormwater facility locations, and power generation and distribution needs. In addition, noise impacts are expected to persist 2,100' from the elevated alignment and 1/4 mile from the TMF and therefore indirect impacts to PRR have not been adequately addressed and are underestimated. The DEIS recognizes PRR as a "parkland of national significance" (DEIS page 4.5-11) and that project impacts will be difficult to mitigate. Furthermore, FWS has concerns about compatibility of high-speed trains through PRR and we do not have legal authority to transfer property for other use, and therefore, an elevated guideway through the PRR is not considered to be reasonable or feasible. FWS contends these impacts and issues are substantive, and recommends additional alternatives including tunneling under PRR be evaluated to further minimize impacts and therefore reduce time and cost needed to acquire right-of-way and mitigate impacts.
5	1.2.3.1	1-6	Table 1.2-1: Add FWS as landowning agency requiring a Congressional Act to authorize agency action.
6	1.2.3.1	1-6	Is this the Maryland Streamlined Environmental and Regulatory Process? If so, please reference. According to project NEPA schedule, FRA will identify a preferred alternative in FEIS. If so, when will FRA seek agency concurrence for milestone #3 - Preferred Alternative/Conceptual Mitigation? Are any state-level regulatory or resource agencies designated as concurring agencies under this process? What are roles, responsibilities, and expectations of concurring agencies through this process?
7	2.2.1	2-5	SCMAGLEV does not have stations planned at College Park or Fort Meade, so how does it support anticipated growth in these areas?
8	3.1	3-2	Alignment shifts may have negative impacts on system performance, reliability, and financial viability, but could reduce time and costs needed to acquire right-of-way and mitigate land and resource impacts. This is especially case for parkland of national significance and having unique features that would be difficult to replicate and mitigate.
9	3.1	3-2	Despite close coordination among FWS, FRA and BWRR, there are information gaps throughout the DEIS because SCMAGLEV is new technology in the U.S. but SCMAGLEV has been in operation for 50 years in Japan (Section 4.22.4.2). In addition to design criteria, how were

APPENDIX 2 – FWS SPECIFIC COMMENT MATRIX			
ID#	**Section**	**Page**	**Comment**
			environmental planning reports and other impact studies used to inform the DEIS, or will be used for the FEIS?
10	3.1.1	3-3	Will permanent maintenance access and emergency egress facilities, environmental site design approaches to stormwater management, or clear zones be required along the viaduct? If so, these will severely limit ability to retain and re-establish resource function. Is 72' right-of-way sufficiently wide to account for these requirements?
11	3.2.1	3-6	Preliminary alternatives were eliminated based on impacts to existing and planned Amtrak's NEC and MARC infrastructure but not PRR which the DEIS recognizes as a parkland of national significance and being difficult to mitigate. SCMAGLEV will provide redundant rail transportation options between Baltimore and Washington, D.C., so how will NEC and MARC ridership be affected? How does SCMAGLEV obviate need for existing or planned NEC and MARC facilities? How does planned NEC, MARC, and other transportation improvements obviate need for SCMAGLEV?
12	3.2.3	3-7	Design refinements were introduced in 2020 and changed alignments, TMF site requirements, and size and location of ancillary facilities. Were design refinements applied and resource impacts re-evaluated for all 14 preliminary alignments? How does design refinements affect alternatives analysis and alternatives retained for detailed analysis?
13	3.3.2	3-12	Any proposed use of the PRR must undergo a Compatibility Determination under 16 U.S.C 668dd and applicable FWS policy. Furthermore, Pub. L. 101-519,§ 126(c), 104 Stat. 2247 (Nov. 5, 1990) states that the Secretary of the Interior may not convey, lease, transfer, declare excess or surplus, or otherwise dispose of any portion of the property transferred thereby for administration as part of the PRR without the approval of Congress.
14	3.3.2.1	3-18	Are portal locations considered fixed or can they be shifted to avoid and minimize land and resource impacts? Increasing tunnel sections may reduce time and cost to acquire right-of-way and mitigate land and resource impacts.
15	3.3.2.1	3-18	Further coordination will be required to reduce and mitigate artificial lighting (e.g. construction, operational and maintenance) impacts on wildlife research, habitat function, and public use on PRR land.
16	3.3.2.2	3-22	MD 198 TMF site will require significant stream, floodplain, and wetland fill, and convert forest into impervious land cover for a 180-acre site. This will impact Little Patuxent River water quality, hydrology, and hydraulics and impacts will extend well beyond the Project Affected Environment. PRR is located 1/2 mile downstream and is bisected by the Little Patuxent River, and so impacts to PRR resources are expected.
17	3.3.2.2	3-20	BARC West, BARC Airstrip, and MD 198 TMF sites have significant direct and indirect impacts to protected lands and resources. Additional

APPENDIX 2 – FWS SPECIFIC COMMENT MATRIX			
ID#	**Section**	**Page**	**Comment**
			TMF sites that are less preferable but still feasible should be fully evaluated in the FEIS.
18	3.3.2.7	3-36	Multiple SCMAGLEV systems are illustrated along alignments in the map appendices, but these are not adequately described. What is the function of these SCMAGLEV systems, and what are anticipated impacts to surrounding lands and resources?
19	3.3.2.9	3-37	Table 3.4-6: BWP / MD 198 high voltage corridor is partly PRR land and should be identified as such. Table indicates lines will be relocated and raised - this is inconsistent with Section 4.7.4.
20	4.1.2	4.1-2	Cleared mature forests and FIDS habitat will require 75-100 years to re-establish and success will be challenged by invasive species competition and soil compaction from heavy construction equipment, and so should be considered as a long-term impact throughout the FEIS.
21	4.1.2	4.1-2	The Project Affected Environment is used to determine direct impacts, but indirect impacts to land and resource categories are not adequately considered by the DEIS. Are impacts in the DEIS quantified conservatively as worst-case scenarios for all land and resource categories and expected to decrease as project design is advanced and finalized?
22	4.1.2.2	4.1-4	Project has considerable construction impacts that can significantly influence alternatives analysis especially if impacts cannot be mitigated. Will construction management plans be developed with affected property owners and stakeholders before FRA publishes its selected alternative in the FEIS / ROD?
23	4.1.2.2	4.1-8	Will renewable energies (e.g. rooftop solar panels), green infrastructure approaches to stormwater management and noise-walls around TMFs be incorporated into project?
24	4.3.2.2	4.3-2	Please clarify if the land use buffer extends 500' on each side or if 500' is the total buffer width.
25	4.3.2.2	4.3-2	FRA should review PRR Comprehensive Conservation Plan (CCP) to consider if proposed transportation land use is consistent with PRR plans. Have additional land use policies, plans, and regulations been developed or updated since 2016?
26	4.3.3.2	4.3-7	PRR is zoned by local jurisdictions as 'other' but has natural resource management and passive recreation function similar to 'open space' zoning. Excluding PRR from 'open space' category under-represents impacts to lands being protected and managed for these functions.
27	4.3.4.2	4.3-13	MD 198 TMF site will require significant Little Patuxent River and floodplain relocation and impact properties to the east. Have land and resource impacts needed for relocating Little Patuxent River and floodplains been accounted for throughout the DEIS? If not, this will need to be remedied in the FEIS.
28	4.4.4.2	4.4-5	Alignment on viaduct is avoidance and minimization measure for surface impacts, but placing alignment on elevated viaduct can extend noise, visual, and electromagnetic impacts. For example, the elevated viaduct would be

APPENDIX 2 – FWS SPECIFIC COMMENT MATRIX			
ID#	**Section**	**Page**	**Comment**
			up to 140' above the ground surface and possibly reach above forest canopy tops in PRR, and therefore is expected to extend noise impacts further into FIDS habitat.
29	4.4.4.2	4.4-9	Forests provide numerous services including reduce peak summer temperatures, stormwater management, carbon storage and intercept airborne pollutants. How does DEIS address lost air and water quality services from forest clearing on the local community which includes minority and low-income populations?
30	4.4.4.2	4.4-13	Snowden Cemetery is a Fort Meade inholding and is not owned by PRR. Relocating Snowden Cemetery remains within PRR will require land transfer, and possible land use conversion, UXO sweep and removal, and road access to cemetery, and so may be problematic.
31	4.5.4.2	4.5-11	PRR does not have an environmental justice (EJ) designation because it does not contain residential and/or commercial land uses but PRR does serve the minority and low-income populations surrounding it. Therefore, SCMAGLEV impacts to PRR and its effects to nearby EJ populations should be considered and quantified. Excluding PRR in this analysis discounts EJ designated communities public use and ecological benefits derived from PRR.
32	4.5.4.2	4.5-12	FWS has closely coordinated with FRA and BWRR throughout the NEPA study, but FWS has not discussed mitigation options to offset potential land and resource impacts to PRR.
33	4.6	Title Page	Typo - should be Section 4.6, not 4.06.
34	4.7.2.1	4.7-3	FWS will continue to coordinate with FRA to evaluate possible Section 4(f) impacts to PRR.
35	4.7.2.2	4.7-4	2,100' is predicted noise impact limits of elevated guideway (Section 4.17.4.2), and 1/4 mile is noise and land use impact limits of TMF sites (Section 4.3.2.2). These distances should be used to determine the Project Affected Environment and indirect impacts to PRR and other noise-sensitive lands and resources throughout the DEIS. For PRR, noise disturbance will indirectly impact wildlife research, habitat function and public use functions.
36	4.7.2.2	4.7-5	Not clear what data source is used for PRR boundary throughout the DEIS and public website. Google Earth is not an accurate source for PRR boundary. The following link provides most up-to-date and accurate mapping available for PRR boundary: https://www.fws.gov/gis/data/CadastralDB/index_cadastral.html?q=Realty&sort=none&metadata_type=geospatial&organization=fws-gov&ext_location=&ext_bbox=&ext_prev_extent=-142.03125,8.754794702435605,-59.0625,61.77312286453148#sec-tags
37	4.7.3	4.7-6	Please include summary table to quantify indirect impacts to recreational facilities and parklands by landowner and by alternative in the FEIS.

APPENDIX 2 – FWS SPECIFIC COMMENT MATRIX			
ID#	**Section**	**Page**	**Comment**
38	4.7.4.2	4.7-9	Summary of Build Alternative impacts is limited to permanent impacts, but temporary impacts are significant and have a broad range (16.1 to 59.3 acres) depending on alternative. Please include summary of temporary impacts by build alternative in the FEIS.
39	4.7.4.2	4.7-9	Section does not adequately address direct and indirect impacts to the full suite of public uses provided by the PRR. PRR provides wildlife-dependent and non-wildlife-dependent recreational activities including wildlife observation and photography, fishing, hunting, hiking, bicycling, and horseback riding. May be helpful to refer reader to wildlife impacts described in Chapter 4.12 - Ecological Resources to support assessment of impacts to wildlife-dependent recreational activities.
40	4.7.4.2	4.7-10	Tables 4.7-2, 4.7-3, and 4.7-4: Titles should be clarified - these are a summary of direct impacts only and do not include indirect (e.g. noise and visual) impacts. A summary of indirect impacts by alternative should be included in the FEIS to more fully assess impacts to recreational facilities and parklands.
41	4.7.4.2	4.7-12	Fencing around viaduct and facilities will fragment habitat and restrict movement by terrestrial wildlife. What are limits of fencing within PRR? Are there additional health, safety, or security concerns that will affect public access, wildlife research, or habitat function beyond fenced areas along the corridor? Will temporary fencing or additional set-backs be used during construction?
42	4.7.4.2	4.7-12	Please provide map illustrating total impacts to PRR, and summarize based on impact (permanent, temporary construction, indirect, etc.) and by land cover type, and clarify if 165 acres include physical (permanent and temporary) impacts.
43	4.7.4.2	4-7.12	How will this 300' wide area extending southwest (versus southeast?) of the alignment be adversely affected? What is rationale of 300' (versus 2,100') wide area?
44	4.7.5	4.7-21	What is the duration of short-term construction effects on PRR? How do these impact public access, wildlife research, and habitat function of PRR?
45	4.7.5	4.7-21	Viaduct laydown area in PRR is not discussed but is illustrated in Natural Resource Map Atlas: Sheet 8 of 14. Are other construction access or staging areas needed within PRR?
46	4.7.5	4.7-22	Is Alternative J1-01 viaduct leading to MD 198 TMF site within 800' or 2,100' of PRR? We recognize J1-01 will have no direct impacts to PRR but proximity of construction, operations, and maintenance could have indirect effects to PRR resources.
47	4.7.5	4.7-23	PRR is directly adjacent to BARC Airstrip TMF site, and so will be indirectly impacted by construction and operations.
48	4.8.3	4.8-18	Snowden cemetery is not included in Table 4.8-4 or illustrated in Appendix B: Cultural Resources Map: sheet 14.

APPENDIX 2 – FWS SPECIFIC COMMENT MATRIX			
ID#	**Section**	**Page**	**Comment**
49	4.9.2.2	4.9-2	Artificial lighting required for construction, operations, maintenance, and security will impact wildlife research, habitat function and public use on PRR land.
50	4.9.4.2	4.9-10	Illustrative rendering of alignment J at PRR / scenic Patuxent River corridor would be helpful.
51	4.9.4.2	4.9-24	Table 4.9-3: Visual Sensitivity of Resources Impacted is understated in the table and throughout the DEIS. The viaduct will reach 140' tall within PRR and will be 170' tall north of the refuge, plus there will be a ground wire proposed above this elevation. At this height, aviation obstruction lights may be required for Tipton Airport aircraft.
52	4.9.4.4	4.9-29	Additional coordination with FWS will be required to develop BMPs and mitigation strategies for visual and lighting impacts, and to maintain ecological health and function of forests.
53	4.10.2.2	4.10-3	It is not clear if 2 separate geographic limits were used to screen water resource impacts? If so, how are regional level impacts defined?
54	4.10.3.3	4.10-8	How will FRA assess tunnel impacts to private wells?
55	4.10.4.2	4.10-15	Area surrounding BARC Airstrip TMF site is characterized by seeps, springs, and high water table. How will a 180- acre impervious site affect wetland hydrology and habitat in the area including adjacent PRR lands?
56	4.10.4.2	4.10-16	FWS recognizes soil disturbance and compaction (and invasive species) will challenge site restoration to pre-construction conditions, but construction BMPs, soil amendments and regular plant maintenance can increase likelihood of success.
57	4.10.4.2	4.10-17	Will dewatering be required during construction or permanently from tunneled sections or other underground facilities? Has discharge quantity, quality and locations been evaluated? Will tunnel boring machine operations require water? If so, where will water be sourced?
58	4.10.4.2	4.10-19	The DEIS characterizes TMF to be predominantly impervious and will be difficult to fully provide stormwater quality and quantity treatment on-site.
59	4.10.4.2	4.10-19	Dewatering or lowering groundwater levels can affect wetland and stream hydroperiod, and lead to large-scale changes in vegetation cover and habitat function. A more thorough investigation into groundwater impacts should be included.
60	4.11.1	4.11-1	Not clear what 'District-related waters' are. Are these waters regulated by Section 404 of the Clean Water Act?
61	4.11.2.2	4.11-2	Project Affected Environment includes a 30' buffer for wetlands and waterways, but non-tidal wetlands of special state concern have an extended 100' buffer and so may be insufficient to capture all regulated wetland and waterway resources.
62	4.11.2.2	4.11-2	PRR has steep slopes and mature trees along the J alignment. Does LOD and 30' buffer take into account additional footprint that may be needed to provide adequate erosion and sediment control and root zone protection for

APPENDIX 2 – FWS SPECIFIC COMMENT MATRIX			
ID#	**Section**	**Page**	**Comment**
			these areas? Does LOD also take into account any stream and outfall stabilization that might be needed?
63	4.11.2.2	4.11-2	Published mapping resources have limitations and are intended to provide reconnaissance level info and require field investigation to identify and delineate wetlands and waterways. How do quantitative analysis of inventory and impacts take into consideration differences between field delineated and mapped approximated wetlands and waterways? How are presence of vernal pools identified through mapping resources and during field delineations?
64	4.11.2.2	4.11-3	NWI maps show waterways bisect the proposed long-term construction laydown / Konterra site, so avoiding waterway (and wetland) impacts will be challenging if full site access is anticipated. There are also Sensitive Species Project Review Area on the property that might further limit full use of the site.
65	4.11.2.2	4.11-3	Field delineated wetlands may be smaller than NTWSSC mapped polygons, but its 100' buffer extends the regulated area beyond the wetland boundary.
66	4.11.3	4.11-4	Table 4.11-1: Title is confusing. Is this an inventory of wetlands and waterways located within the Project Affected Environment, or is it summary of wetlands and waterways impacted by build alternative?
67	4.11.3.1	4.11-5	NTWSSC along Patuxent River is actually depicted on Appendix B.3 Map Sheet 7 and not on Sheet 6.
68	4.11.3.1	4.11-6	Please provide summary of field delineated and mapped wetlands by cover type and waterways by flow regime located along PRR.
69	4.11.3.2	4.11-6	Stream impacts are not limited to crossings. Project will also include surface facilities (e.g. TMF) that will require permanent stream fill and relocation impacts.
70	4.11.4.2	4.11-10	Temporal loss of forested wetlands and stream buffers will have long-term impacts to water and habitat quality even for areas where forests can be re-established after construction.
71	4.11.4.2	4.11-11	Were functions and values assessment conducted for this and other delineated wetlands? Elevated guideway with strategic pier placement would minimize impact to wetland hydrology, but clearing and maintaining a 72' wide corridor, constructing an elevated viaduct up to 140' above the ground surface, and high speed rail operations and maintenance will significantly impact wetland functions. Furthermore, disturbed areas can encourage spread of invasive plants and degrade additional habitat areas if not effectively controlled.
72	4.11.4.2	4.11-12	Please provide summary of temporary and permanent wetland and waterways impacts within PRR.
73	4.11.4.2	4.11-13	Similar to wetlands and tidal waterways, please include square feet of impact by waterway type for each build alternative.

APPENDIX 2 – FWS SPECIFIC COMMENT MATRIX			
ID#	**Section**	**Page**	**Comment**
74	4.11.4.2	4.11-14	We recognize inconsistency between Critical Area and MDE stream designated use maps but omitting from both summary tables under-represent stream impacts and is inconsistent with strategy to estimate resource impacts conservatively.
75	4.11.4.2	4.11-14	Stream relocation should have no loss and preferably uplift of stream function to be considered a temporary impact.
76	4.11.4.3	4.11-17	Routine management will be required to prevent invasive plants from establishing in construction disturbed areas, and from spreading into other habitat areas on PRR.
77	4.11.4.3	4.11-18	Patuxent River stream channel on east side of BWP is braided and sinuous, and so might also require in-stream impacts to cross.
78	4.11.5.1	4.11-18	Should this be Harmans in Anne Arundel County, MD? Even if no direct effects to wetland habitat is proposed, the project should be designed to minimize hydrological impacts to wetlands in the area. Any increased siltation, stormwater runoff, or changes to wetland hydrology affecting wetland habitat should be analyzed as a part of a Biological Assessment. If such impacts may occur, further Section 7 consultation with the FWS may be required.
79	4.11.5.1	4.11-20	Re-establishing wetlands or forested canopy is suitable to minimize impacts along viaduct, but wildlife research, habitat, and public use will be significantly disturbed by SCMAGLEV operations and maintenance and so impacted functions will not be fully replaced.
80	4.11.5.2	4.11-20	13' clearance requirement will severely restrict ability to re-establish mature forest cover under the viaduct and so should be considered a permanent conversion to wetland cover-type.
81	4.12.1	4.12-1	How are other unique and sensitive areas (e.g. Green Infrastructure, Targeted Ecological Areas, Species of Greatest Conservation Need, Watershed Resources Registry) included in analysis?
82	4.12.2.2	4.12-2	In addition to common species, upland meadows, scrub-shrub, mesic mixed hardwood forests, and wetlands and waterways support numerous Species of Greatest Conservation Need as designated by the 2015 Maryland State Wildlife Action Plan (SWAP). The SWAP identifies land conversion and habitat fragmentation to be primary threats to SGCN and so every effort should be made to conserve these habitats.
83	4.12.3	4.12-3	How was extent of forest and FIDS habitat determined? Which GIS databases and /or aerial imagery was used to identify?
84	4.12.3	4.12-4	Table 4.12-1: Please include square feet of impact for aquatic habitat type for each build alternative.
85	4.12.3.1	4.12-5	In addition to FSD to comply with FCA requirements, a forest inventory assessment will be needed for PRR. Forest inventory will used to quantify unavoidable tree clearing impacts and determine suitable mitigation which may be above and beyond FCA requirements.

APPENDIX 2 – FWS SPECIFIC COMMENT MATRIX			
ID#	**Section**	**Page**	**Comment**
86	4.12.3.1	4.12-6	Please cite or reference source for historic decline of bird species populations dependent on FIDS habitat and acreage of this habitat type in the Mid-Atlantic Region.
87	4.12.3.2	4.12-8	We are unaware of any ongoing bald eagle nesting survey efforts within the State of Maryland.
88	4.12.3.2	4.12-8	Bald eagles are protected by the Bald and Golden Eagle Protection Act (BGEPA) and the Migratory Bird Treaty Act. BGEPA prohibits 'take' of bald or golden eagles without a permit issued by the Secretary of the Interior. The Act defines 'take' as pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest, or disturb.
89	4.12.3.3	4.12-8	Yellow lance (*Elliptio lanceolata*) is a Federal listed threatened species that may occur in the project area. Yellow lance is present upstream in the Patuxent River watershed and there are historic occurrence records from the PRR area but surveys have not been conducted within PRR and so we cannot confirm if they are currently present within PRR. FWS recommends mussel surveys be conducted along the Patuxent and Little Patuxent Rivers to determine if yellow lance are present in the project action area to satisfy Section 7(a)(1) requirements of the Endangered Species Act.
90	4.12.3.3	4.12-8	Monarch butterfly (*Danaus plexippus*) was designated as a candidate species in December 2020 and may be present in the project action area. Candidate species warrant Endangered Species Act (ESA) listing but are precluded from listing by other higher priority listing activities. Candidate species do not have statutory protections under the ESA but are reviewed annually and may be later proposed for listing.
91	4.12.3.3	4.12-8	Wood turtles (*Glyptemys insculpta*) have been petitioned for Federal listing under the Endangered Species Act and may be present in the project action area.
92	4.12.3.3	4.12-9	Yellow lance is a Federally threatened species under the Endangered Species Act - it is not endangered.
93	4.12.4.2	4.12-13	2,100' is predicted noise impacts from elevated guideway (Section 4.17.4.2) - why is this distance not used to determine SCMAGLEV Project Affected Environment and indirect impacts to noise-sensitive resource categories throughout DEIS including FIDS habitat and PRR?
94	4.12.4.2	4.12-13	Please provide quantitative summary of direct and indirect impacts to forest, forest conservation easements, FIDS, scrub-shrub, and meadow habitat by alternative, and include alternatives analysis of these impacts in the DEIS.
95	4.12.4.2	4.12-16	Please refer to the following review paper for lighting effects on wildlife: Longcore, T. and C. Rich. 2004. Ecological Light Pollution. Frontiers in Ecology and the Environment 2(4): 191–198.
96	4.12.4.2	4.12-19	Spotted turtle is species petitioned for Federal listing under the Endangered Species Act and should be included in RTE Environmental Consequences section.

APPENDIX 2 – FWS SPECIFIC COMMENT MATRIX			
ID#	**Section**	**Page**	**Comment**
97	4.12.5.1	4.12-22	FWS recognize efforts to avoid impacts to habitats and sensitive species associated with the Anacostia River and Patapsco River crossings, but there are many high quality and sensitive species and habitats associated with the Patuxent River and PRR that could also be avoided if additional sections of J alignment was tunneled.
98	4.12.5.1	4.12-24	FWS recommend the following NLEB conservation recommendations pursuant to Section 7(a)(1) of the Endangered Species Act: (1) perform surveys using the most recent Range-wide Indiana Bat/NLEB Summer Survey Guidelines, and (2) conduct tree clearing outside the NLEB pup season (May 1 through July 31).
99	4.12.5.1	4.12-24	Access road along the BGE ROW is PRR owned land. SCMAGLEV would need to obtain PRR permission if any use is proposed.
100	4.12.5.1	4.12-25	Potential for SCMAGLEV-wildlife strikes along sections through the PRR and migration corridors (e.g. Patuxent River corridor) is a major FWS concern. Please include summary of possible mitigation techniques in DEIS.
101	4.13.3	4.13-3	Figure 4.13-1: Physiographic Provinces: Coastal "plane" should be "plain".
102	4.15.5	4.15-13	Spill and runoff prevention of hazardous and other chemicals during construction, operations, and maintenance is a significant concern for PRR and should be more thoroughly addressed in the DEIS.
103	4.17.3	4.17-9	Table 4.17-6: Public recreation, wildlife research and habitat function are noise-sensitive uses of PRR. Why were noise-monitoring locations not set-up along PRR?
104	4.17.6.1	4.17-19	Mitigation strategies to minimize or eliminate potential noise and vibration impacts should also be considered for viaduct sections through PRR and TMF sites. Structural strategies to shield viaduct may also help to reduce SCMAGLEV-wildlife strikes.
105	4.18.2.2	4.18-2	Research animals is an EMI concern for the Beltsville Agricultural Research Center. What are electromagnetic fields effects on bird migration and other wildlife?
106	4.18.4.2	4.18-3	Shock hazards to wildlife and people is a concern for PRR. How easily and reliably can hazard be avoided by grounding the metal?
107	4.19	4.19-13	Will energy generation (e.g. Appendix G-10) and transmission connections or infrastructure upgrades be needed to support SCMAGLEV operations? If so, will resource impacts be assessed in this NEPA study?
108	4.22.4.2	4.22-17	There is no Section 4.22.6 - maybe page 4.22-6?
109	4.24.1.1	4.24-2	PRR is a national wildlife refuge protected in perpetuity. Will be very difficult if not impossible to mitigate by replacement with same acreage and same functions.

APPENDIX 2 – FWS SPECIFIC COMMENT MATRIX			
ID#	**Section**	**Page**	**Comment**
110	5.4.2.4	5-27	FWS also has project review responsibilities under the Fish and Wildlife Coordination Act, Bald and Golden Eagle Protection Act, and Migratory Bird Treaty Act.
111	A.1 - Section 4(f)	Page 7 of 14	BARC Airstrip TMF site appears to encroach onto PRR. Please confirm if TMF site will directly impact PRR.
112	Appendix G	Part G	Appendix G Part G (G.02 DEIS Drawings for Facilities and Systems J alignment) and Appendix G, Part J (G.02 DEIS Drawings for Facilities and Systems J1 Alignment) are mislabeled, both files contain J and J1 alignment drawings.
113	Appendix B	B.4	Please include a full-size overview map indicating the location of the map segments.
114	Appendix B	All	Please label what build alternative polygons represent. Are they the SCMAGLEV Project Affect Environment, right-of-way, permanent and temporary effects, or the direct and indirect effects?
115	Appendix B	All	Please add label showing parkland east of BARC Airstrip TMF as the PRR, designate PRR polygon as Section 4(f) resource in legend, and confirm PRR property boundary is from: https://www.fws.gov/gis/data/CadastralDB/index_cadastral.html?q=Realty&sort=none&metadata_type=geospatial&organization=fws-gov&ext_location=&ext_bbox=&ext_prev_extent=-142.03125,8.754794702435605,-59.0625,61.77312286453148#sec-tags
116	Appendix D.1	D.1-4	Table D.1-1: Add Public Law 101-519 (Military Construction Appropriations Act of 1991) Section 126(c) prohibits the Secretary of Interior from conveying, leasing, transferring, or declaring excess or surplus any portion of land transferred from the Secretary of the Army, unless approved by law.
117	Appendix D.1	D.1-5	Table D.1-1: U.S. Fish and Wildlife Service Coordination Act should be the Fish and Wildlife Coordination Act.
118	Appendix D.7	Attachments	IPaC resource list was generated on December 4, 2020. Official species lists obtained from IPaC are valid for 90 days. After 90 days, project proponents should confirm their results on IPaC by requesting an updated official species list for their project in IPaC.
119	Appendix D.7	D.7-114	Prescribed burns are a critical land management tool used by PRR to maintain habitat. How will either J or J1 alignment or ancillary facilities affect FWS ability to continue to manage land using prescribed burns?
120	Appendix D.7	D.7-126	Please add summary table of indirect FIDS impact by build alternative and by landowner.
121	Appendix D.7	D.7-127	Tables D.7-31 and D.7-32: Please clarify if tables include forest impacts from temporary construction-related activities.
122	Appendix D.7	D.7-77	Table D.7-12: Please include square feet of waterways impact for each build alternative.

APPENDIX 2 – FWS SPECIFIC COMMENT MATRIX			
ID#	**Section**	**Page**	**Comment**
123	Appendix D.7	D.7-90	There are many other possible types of indirect impacts to wetlands including changes to wetland size, cover type, and habitat fragmentation. How are these indirect impacts being considered in the DEIS?
124	Appendix D.7	D.7-94	Table D.7-22: Title should be linear feet not acres. Please provide square feet of waterway impacts in Tables D.7-22 and D.7-23.
125	Appendix E.2	17	Table 3: Shows Admin DEIS sent to cooperating agencies on Oct 2021.
126	Appendix G11	9	According to the DEIS, all J Build Alternatives will impact up to 165 acres of the PRR. These impacts do not consider Rule of Particular Applicability, utility connections and conflicts, emergency vehicle access, stormwater facility locations, and power generation and distribution needs or the full 2,100' wide limits of noise disturbance, and so impacts are significantly under-estimated in the DEIS. The DEIS recognizes PRR as a parkland of national significance and project impacts will be being difficult to mitigate. Furthermore, FWS has concerns about compatibility of high-speed train through PRR and we do not have legal authority to transfer property for other use, and so consider elevated guideway through the PRR to be not reasonable and not feasible. FWS contends these impacts and issues are substantive, and recommends additional alternatives including tunneling under PRR be evaluated to further reduce impacts and therefore reduce time and cost needed to acquire right-of-way and mitigate impacts.
127	D.01	D.1-1	In addition to Compatibility Determination and approval to release an interest in land, applicant must complete FWS Standard Form 299 and follow 50 CFR.
128	F.2.1	F-F-2	If FRA is not subject to 23 CFR Part 774 but following as guidance only - under what authority does FRA cite to transfer title from the USA to the proponent?
129	F.5.1.1	F-56	DEIS identifies inability of the Secretary of DOI to dispose of lands and also requires a Compatibility Determination. While a mitigation strategy is to use less land, the proposal has a footprint of impacted land and resources that has not been fully depicted in the DEIS.
130	F.5.1.1	F-68	Impacts to national wildlife refuge are more significant than stated. Conditions of several impacts may require Constructive Use.

APPENDIX 3 - OFFICE OF POLICY ANALYSIS SPECIFIC COMMENTS

The following supplements the summary points in the consolidated DOI letter under the heading Impacts to Transit, Environmental Justice Communities and Energy, and Mitigation Strategies.

APPENDIX 3 – OFFICE OF POLICY ANALYSIS SPECIFIC COMMENTS		
Page	Section	Comment
4.5-5 4.2-10, 11	4.5 4.2.3.5, 4.2.4.5	**<u>Environmental Justice (EJ) Community Impacts</u>** EJ Impacts are not considered sufficiently in the DEIS, especially in light of the priorities highlighted in Executive Order 13985, "On Advancing Racial Equity and Support for Underserved Communities Through the Federal Government" (January 20, 2021). This will need to be resolved in the FEIS. In addition, the identified mitigation needs appear substantial, but there is insufficient information related to EJ and displaced bus and rail riders. **Section 4.05** This section of the DEIS includes the following statements: "The vast majority of the SCMAGLEV Project impacts would occur in EJ population areas due to the fact that most of the SCMAGLEV Project Affected Environment qualifies as EJ" (DEIS, p. 4.5-5). "The cost of the SCMAGLEV system would be prohibitive for some, notably low-income populations in EJ areas near stations. The SCMAGLEV Project would provide a premium service at a higher fare, estimated at $60 per one-way trip, or seven times the cost of an existing MDOT MTA Maryland Area Regional Commuter (MARC) commuter train fare between Washington, D.C., and Baltimore City. The Project Sponsor is investigating opportunities for fare subsidies to provide greater access for low-income populations since the introduction of the SCMAGLEV Project would provide an additional transportation choice between Washington, D.C., and Baltimore. The SCMAGLEV Project also provides improved direct access to BWI Marshall Airport. Low-income populations in EJ areas would likely choose to continue utilizing existing commuter services at the current estimated fare, unless fare equity was provided by the Project Sponsor to affected EJ communities" (DEIS, pp. 4.5-18,19). While we are uncertain about projected use of SCMAGLEV (see the detailed discussion and analysis further below in Transportation Impacts, DEIS Section 4.2.3.4), the DEIS is clear and compelling that EJ populations would be adversely affected, including transportation,

APPENDIX 3 – OFFICE OF POLICY ANALYSIS SPECIFIC COMMENTS		
Page	Section	Comment
		community facilities, parkland, aesthetics, and visual quality. "EJ impacts would occur along the length of the SCMAGLEV Project corridor particularly in proximity to aboveground construction, including the stations, viaduct, tunnel portals, TMF [train maintenance facility] sites, and ancillary facilities" (DEIS, p. ES-15). We are concerned that more thorough evaluation is being left to the FEIS: "Prior to the FEIS, FRA will continue public outreach, stakeholder coordination, and mitigation identification efforts needed to refine the EJ analysis. FRA will document the outcome of the disproportionality analysis in the FEIS. In the FEIS, if FRA makes a finding of a disproportionately high and adverse impact, the document will include the appropriate analysis as required by DOT Order 5610.2(a) and Title VI" (DEIS, p. 4.5-5). The USDOT's 2012 policy is clear that a "substantial need" for SCMAGLEV must exist, based on the overall public interest, for it to go forward with such substantial EJ impacts (DEIS, p. 4.5-2). Although EJ is a factor used in Alternatives Development (Appendix C), additional efforts could be made to avoid EJ impacts in the project planning rather than focus primarily on the mitigation options mentioned in the DEIS and discussed below. For example, "FRA used the Baltimore and Washington, D.C. Metropolitan Statistical Areas (MSAs) to define the SCMAGLEV Project Affected Environment for which this analysis is focused" (DEIS, p. 4.6-2). While the MSAs are standard, perhaps the analysis should be conducted at a more refined spatial scale because of the prevalence of EJ, rather than just reserving EJ impacts as part of a disproportionality analysis. The median household annual income in Baltimore City was $50,501 in 2018, which is much lower than the Baltimore MSA of $80,470[9] annually that was used in the DEIS. Similarly, D.C. median household annual income was $85,750 in 2018, while the D.C. MSA of $102,180 annually was used in the DEIS. In addition, on p. 4.513 the DEIS states that "The SCMAGLEV Project could potentially have gentrification and displacement impacts" (DEIS, p. 4.5-13). The DEIS only appears to look at the direct property effects (p. 4.4-1); Appendix D.4 provides a qualitative discussion of gentrification. The literature is clear that there could be long-term, unintended consequences to the local residents.[10]

[9] We found $80,469 is an American Community Survey Estimate for 2018. We also used Census data, which are consolidated by the Federal Reserve Bank of St. Louis (FRED).

[10] See, e.g., https://www.epa.gov/environmentaljustice/equitable-development-and-environmental-justice, https://drum.lib.umd.edu/bitstream/handle/1903/21508/tod_gentrification_v3.pdf?sequence=1&isAllowed=y

APPENDIX 3 – OFFICE OF POLICY ANALYSIS SPECIFIC COMMENTS		
Page	Section	Comment
		<u>Mitigation Strategies</u> The identified mitigation needs appear substantial, but there is insufficient information related to EJ and displaced bus and rail riders, including mitigation costs, which should be further evaluated and included in the FEIS. Section 4.2.3.5, and 4.2.4.5 include the following statements: "Changes in how trips are made within the SCMAGLEV Project Affected environment, however, will result in forecasted diversions from rail and bus service within the corridor to SCMAGLEV Project (see Table 4.2-3 above). **These forecasted diversions are significant and may require changes in how bus and rail service is provided after SCMAGLEV Project implementation** [emphasis added]" (DEIS, pp. 4.2-8, 9). "At this point, no changes to MARC service or long-range expansion plans and other capital investments have been identified by the Maryland Department of Transportation in response to the forecasted diversions of riders to SCMAGLEV. A specific mitigation plan will need to be developed by the Project Sponsor in consultation with MDOT in order to address the impacts associated with the forecasted diversions. Specific strategies that might be included in this Mitigation Plan may include… Development of New Operating Plans to Reflect New Ridership Demand...; Development of a Revised Financial Plan...; Development of a New Six-Year Capital Plan...; Development of a New Long-Range Plan...; Financial Support" (DEIS, p. 4.2-10, 11). The DEIS identifies multiple strategies in a Mitigation Plan, none of which are costed out, but all have the potential to be high cost, including reduced services, new planning, and financial support to MDOT. This includes "lower service frequencies, shorter hours of service, scaling back mid-day service on the Penn Line and scaling back of weekend service" (DEIS, p. 4.2-11). These changes in service could impose significant costs in lost time and productivity for riders who are not able to divert their trips to SCMAGLEV or other forms of transportation. Neither Chapter 4 of the DEIS, nor its accompanying technical appendices, identifies which segments of MARC's current or future ridership would be most impacted by these changes. For example, MARC Penn Line data from MDOT (FY 2019) show there are more average weekday riders at Odenton Station (2,482) than at BWI (2,191); there are also a large number of riders at

APPENDIX 3 – OFFICE OF POLICY ANALYSIS SPECIFIC COMMENTS		
Page	Section	Comment
		Halethorpe Station (1,355).[11] Both Odenton and Halethorpe stations provide free parking; as mentioned above, BWI provides free parking for MARC BWI monthly ticket holders. The DEIS is unclear to what extent the DEIS is assuming conversion from these other utilized MARC stations and included the resulting increased travel time and potential parking costs. Based on the discussion of disproportionality, it is possible that a significant portion of the affected ridership would consist of low-income and/or minority riders, leading to EJ impacts. Such riders would be less likely to divert to the SCMAGLEV Project or other forms of transportation and could bear a disproportionate share of the costs from reduced services, necessitating mitigation. Another mitigation strategy suggested by the DEIS could consist of "a revised financial plan reflecting new operational levels" (DEIS, p. 4.2-11). The DEIS further states that "Service level changes will affect all aspects of operations including staffing levels for train crews, cleaning crews, vehicle maintenance crews, yard operations crews and station attendants" (DEIS, p. 4.2-11). The reduced employment opportunities implied by these staffing changes by MARC would have a negative impact on some households in the region. It is possible that these households are disproportionately situated in EJ communities, which would also result in uneven impacts. A revised financial plan could also attempt to address the declines in fare revenues from MARC riders diverting to the SCMAGLEV Project by requiring offsetting increases in fares for the remaining riders. As noted previously, this could have a larger impact on riders who are unable to divert to the SCMAGLEV Project or other forms of transportation. Further analysis would be required to determine the total impacts to MARC's operations and financial viability, whether the changes would have a disproportionate impact on EJ communities, and the extent of mitigation needed to offset these impacts. A smaller proportion of the diversions to the SCMAGLEV Project from rail are forecasted to consist of riders using the Amtrak inter-city rail service, operated by the Federal Government. The DEIS finds that trips on Amtrak between Washington D.C., Baltimore City, and BWI "are a small part of total boardings at these stations" as most trips are destined for cities beyond this region (DEIS, p. 4.2-13). However, of the 354,800 trips made between these stations in 2019, around 94% are forecasted to be diverted to SCMAGLEV (DEIS, p. 4.2-12).

[11] https://data.imap.maryland.gov/datasets/e476dcb6dc154683ab63f23472bed5d6_6?geometry=-78.752%2C38.855%2C-75.283%2C39.600

APPENDIX 3 – OFFICE OF POLICY ANALYSIS SPECIFIC COMMENTS		
Page	Section	Comment
		The DEIS states there is "no definitive plan" for impacts that could include "service changes to match train frequency and hours of service to new ridership demand as well as a scaling back of future planned expansion plans and new service initiatives" (DEIS, p. 4.2-13). There are again no details on which segments of Amtrak ridership would be impacted by these changes, and further analysis would be required to examine the operation and financial impacts of these changes, as well as any potential EJ impacts. For example, a reduction in service at Amtrak's New Carollton Station, could adversely affect access to the D.C. Metro Orange Line. As noted in the discussion below on the Future No-build Alternative, the FEIS should provide information on other transit initiatives and whether the projects, including NEC future, will be met by these other initiatives. Diversions from bus transportation to the SCMAGLEV Project are forecasted to range from 240,000 to 300,000 annual trips. These bus trips would come from the public express bus service operated by MDOT MTA or from privately operated inter-city bus services. Both types of services are "direct competitors to SCMAGLEV Project and therefore would stand to lose riders if SCMAGLEV Project would provide a more attractive trip, as shown by the forecasted diversions" (DEIS, p. 4.2-17). As discussed above, we are uncertain about this rate of diversion. The economics literature indicates increases in rail trip prices lead to increased bus ridership. Similar to the mitigation strategies proposed for MARC rail service changes, the DEIS suggests mitigation strategies for diversions from bus services could consist of new operating plans, revised financial plans, and financial support, among other suggestions. There are no details provided on EJ-focused mitigation efforts.
4.2-12	4.2.4.2	**No Build Alternatives** **Future No Build Alternative** The No Build Alternative describes a number of initiatives that need to be explored further in the FEIS, whether public transportation needs will already be met through the existing initiatives. "A number of initiatives have been identified that are focused on improving intercity passenger rail service within the SCMAGLEV Project Affected Environment…Of particular note are improvements identified by FRA in the NEC FUTURE ROD in order to meet service and performance objectives to improve and grow the role of passenger rail along the NEC**. If projects identified in the NEC FUTURE Plan are implemented, the capacity and performance of intercity passenger rail within the**

APPENDIX 3 – OFFICE OF POLICY ANALYSIS SPECIFIC COMMENTS		
Page	Section	Comment
		SCMAGLEV Project Affected Environment would improve [emphasis added]. In addition to the initiatives outlined above, the new Acela 21 equipment is currently being manufactured and tested. This **new equipment will allow for top operating speeds of 160 mph** [emphasis added]. **Amtrak is also evaluating the potential for low-cost intercity services within the NEC overall, including within the SCMAGLEV Project Affected Environment"** [emphasis added] (DEIS, p. 4.2-12). The No Build Alternative is the baseline condition of the DEIS. It does not imply a static future and should incorporate potential new investments and technological changes that might occur over the period of analysis. "FRA defined the No Build Alternative to include the existing transportation network within the Project Study Area and additional planned and programmed network changes/improvements between current conditions and the 2045 horizon year" (DEIS, p. 3-8). This includes evaluation of plans for major roadways between Washington, D.C., and Baltimore, MD; transit operations in Washington, D.C., BWI Airport, and Baltimore, MD; commuter rail operations between Washington, D.C., and Baltimore, MD; and intercity rail operations between Washington, D.C. and Baltimore, MD (DEIS, p. 3-8). The DEIS specifically mentions the NEC FUTURE ROD (p. 4.2-12) and new Acela 21 equipment that would provide additional high-speed service (p. 4.5-12). Additionally, it is unclear whether and how some plans could be adversely affected by SCMAGLEV. For example, bus rapid transit is identified from MARC Dorsey Station to BWI, but riders could be diverted from Dorsey and services could be reduced because of SCMAGLEV. Finally, we believe that the FEIS should provide sufficient information on the costs of the potential mitigation, and whether those costs will affect the viability of this Project.
G.10-G-15	App. G	**<u>Projected Energy Impacts</u>** As discussed in more detail below, neither the costs of the proposed 13 wind power facilities, nor the environmental impacts have been identified or evaluated. This information should be included in the FEIS. The main body of the DEIS does not mention wind energy, but Appendix G describes a plan for the applicant to develop wind power as a clean/alternative energy source for the SCMAGLEV's formidable energy

APPENDIX 3 – OFFICE OF POLICY ANALYSIS SPECIFIC COMMENTS		
Page	Section	Comment
		demands. Up to 1 GW worth of plans including tentative locations are included As described in DEIS Table 4.19-7, the SCMAGLEV system and ancillary facilities will increase net transportation energy consumption by approximately 3.0 trillion Btus. "The anticipated decrease in energy expenditure from the diversion of auto, bus, and rail traffic to the SCMAGLEV Project is not expected to offset the increase in energy consumption from the SCMAGLEV system" (DEIS, p. 4.9-11). "In terms of energy intensity per PMT [Passenger Miles Traveled], SCMAGLEV compares favorably with auto travel but unfavorably with existing bus and rail transportation modes for both terminal station alternatives. At 1,506 Btu per PMT for the Camden Yards scenario, SCMAGLEV is nearly 25 percent more efficient than auto travel, but **37 and 20 percent less efficient than existing bus and passenger rail, respectively** [emphasis added]" (DEIS, p. 4.9-10). BWRR proposes to source the power needs for the operation of the SCMAGLEV Project using a combination of purchased power and a set of wind power projects. However, these wind power projects have yet to be sited and permitted, and in the absence of these projects the SCMAGLEV would need to rely on the existing generation options for its power needs. Section 2.1 of Appendix G10 states that detailed power requirements cannot be determined without a final design and operating plan. However, Table 2 provides an estimated number of wind turbines that would be required to power a single SCMAGLEV train and to power multiple SCMAGLEV trains operating during a typical weekday. To power a single train during acceleration, seven wind turbines would be required, while up to around 28 turbines are needed to accelerate multiple trains operating simultaneously. This is roughly equivalent to 35 megawatts (MW) and 140 MW of power, respectively.[12] The DEIS notes, "[t]he relative inefficiency of SCMAGLEV Project is likely due to the short distances between the three planned stations which will require frequent periods of acceleration."[13] Appendix A within Appendix G.10 includes information from BWRR's consultant on possible locations for the 13 proposed wind power projects,

[12] For comparison purposes, the State of Maryland had approximately 191 MW of installed land-based wind capacity as of June 1, 2017, supplying 1.4 percent of all instate electricity generation.

[13] "Trains are most energy efficient when cruising at top speed. Acceleration is the most energy intense part of maglev train operation. Therefore, a track design which requires frequent stops followed by periods of acceleration decreases the train's energy efficiency." (DEIS p. 4.19-8)

APPENDIX 3 – OFFICE OF POLICY ANALYSIS SPECIFIC COMMENTS		
Page	Section	Comment
		along with the potential generation capacity of each. The proposed projects would all be sited on state-owned lands in western Maryland, near the border between Garrett and Allegany Counties, and would have a combined generation capacity of 905 MW. Each of the 13 projects would have a stated maximum capacity of 65-70 MW. The projects have been split in this manner to qualify for the exemption from the Certificate of Public Convenience and Necessity (CPCN) requirement under Maryland State Regulation §7-207.1 that is available to individual wind power projects with 70 MW or less of generation capacity, among other requirements (Appendix G.10, p. 10-11). Appendix A does not include an estimate of the total financial costs that would be associated with the procurement, installation, or operation of the proposed projects. The Appendix also does not include an analysis of the possible environmental impacts associated with the proposed wind projects. It identifies the use of larger turbines on a contiguous tract of land could possibly reduce their environmental impact (Appendix G.10, p. 9). It is notable that the proposed projects would all be situated on state-owned lands containing resources managed in trust by the Maryland Department of Natural Resources (DNR), such as state forests and wildlife management areas (WMAs). The DEIS indicates that the 13 projects would be located in the Savage River State Forest (8), Dans Mountain WMA (3), Backbone Mountain (1), and west of Grantsville (1) (Appendix G.10, p. 13). The installation of wind turbines in these locations could produce negative environmental impacts in the form of reduced tree cover and habitat for wildlife, reduced game and opportunities for hunters, reduced carbon sequestration capacity, increased potential for soil erosion and impacts to surrounding watersheds, and reduced recreational opportunities such as hiking and biking. In addition, the presence of large wind turbines could lead to bird fatalities from strikes with the moving rotors. This is a notable concern if projects are situated in or near a WMA. Finally, it is possible that the viewshed could be negatively impacted by the presence of the wind turbines, reducing the scenic value of these locations.
4.2.6-6 et al.	4.2.3.4	**<u>Transportation Impacts</u>** **DEIS Section 4.2.3.4 Impacts, SCMAGLEV Annual Ridership**

APPENDIX 3 – OFFICE OF POLICY ANALYSIS SPECIFIC COMMENTS		
Page	Section	Comment
	App. D.2B	The FEIS will need to clarify and include additional information in the FEIS to support the number of diverted riders estimated, especially given the proposed pricing for SCMAGLEV. On page 2.4-6, the DEIS states that "Introducing a new mode, like the SCMAGLEV Project, to the transportation network may divert ridership from one mode to another based on a change in perception of which mode will provide the most attractive trip based on factors such as trip cost and total trip time between origins and destinations." "Generally, the large majority of forecasted trips on SCMAGLEV Project are diverted from other modes rather than induced new trips" (DEIS, p. 4.2-6). Large segments of the forecasted ridership for the SCMAGLEV Project are projected to consist of diversions from other modes of transportation, with some newly induced ridership by customers who are willing to pay for a "more attractive trip" (DEIS, p. 4.2-17). The majority of the diversions are from automobiles, which can generate benefits in areas with congested roadways like the Baltimore-Washington corridor.[14] However, the forecasted rider diversions from rail and bus have implications for their future operations, financial viability, and expansion plans, as well as potential EJ impacts. The ridership forecast is discussed in *Appendix D.2B Ridership Forecasting – Ridership Forecasting Development Process.* The "Ridership" documents added to the DEIS home page, including the Louis Berger report (2018), are not sufficient for review. There are numerous grayed-out areas marked with what look like they could be FOIA (b)(4) exemptions.[15] As such, we are not able to access a copy of the stated preference survey, no information if provided on who was surveyed, and there are limited details on the analytical methods. In addition, the DEIS states, "The underlying travel market analysis finds that SCMAGLEV travelers value their time highly; they trade the higher cost of a SCMAGLEV fare (relative to alternative modes) for the faster and more reliable trip time" (DEIS, p. 4.6-3). The citation appears to direct the reader to Appendix D.3; however, we did not find information supporting this statement in the appendix. Again, the added ridership reports are not readable.

[14] See, e.g., https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/PublicTransportationsRoleInRespondingToClimateChange2010.pdf , https://mobility.tamu.edu/umr/report/ However, there are studies concluding investment in roads has higher economic returns than public transportation (e.g., Melo et al. 2013. The productivity of transport infrastructure investment: A meta-analysis of empirical evidence. 5 *Regional Science and Urban Economics*, 43: 695–706).

[15] https://bwmaglev.info/project-documents/deis#ridership-studies. Last accessed on May 25, 2021.

APPENDIX 3 – OFFICE OF POLICY ANALYSIS SPECIFIC COMMENTS		
Page	Section	Comment
		In fact, the region has a natural experiment with the introduction of the Acela. The FEIS should clarify if Acela riders have been surveyed to calculate the actual diversion rate when faster transport was made available at a higher cost. Transportation economics research is clear that commuters prefer faster and more reliable commuting times. For example, meta-analysis in Fearnley et al. (2018) indicates that "all other things being equal, a 10% reduction in journey time by rail would act to reduce bus demand by 4.8%" (p. 54).[16] However, researchers also find bus demand is sensitive to price changes in rail, and a 10% increase in rail fare, increases bus demand on average by 2.8%, but the range is 0.2% to 13.1% (Fearnley et al. 2018, p. 55).[17] This concept of modal substitution (also called cross elasticity of demand) and the absence of information raise questions about the large estimated diversion of riders to SCMAGLEV at the high price point per trip. While ridership demand elasticity is mentioned in Berger (2018), there are no readable details. The USDOT has extensive guidance on the value of travel time and is certainly a Federal leader in this area.[18] Berger (2018) indicated they followed the guidelines; however, the are no readable details. Because of this lack of information, we further explored USDOT's guidance. They note, for example, trip purpose matters, and "Research has typically found VTTS [value of travel time savings] for personal travel to be lower than the hourly earning rate."[19] They also state "Certain modes, particularly airlines and high-speed railways, are not close substitutes for conventional surface modes. High-speed railways are associated with the Core Express Corridors defined in the FRA National Rail Plan as connecting large urban areas up to 500 miles apart with 2-3 hour travel time and speeds between 125 and 250 mph."[20] We think SCMAGLEV is an exception to this assertion, and it is actually a direct substitute to the Acela and MARC Train because it consists of three stops and covers only 40 miles. USDOT's recommended VTTS (per

[16] Fearnley, Nils & Currie, Graham & Flügel, Stefan & Gregersen, Fredrik & Killi, Marit & Toner, Jeremy & Wardman, Mark. 2018. Competition and substitution between public transport modes. Research in Transportation Economics: 69.
[17] Ibid.
[18] https://www.transportation.gov/office-policy/transportation-policy/revised-departmental-guidance-valuation-travel-time-economic
[19] Ibid., p 4.
[20] Ibid., p. 7.

APPENDIX 3 – OFFICE OF POLICY ANALYSIS SPECIFIC COMMENTS		
Page	Section	Comment
		person-hour as a percentage of total earnings) is 100% of the median household income for business travelers using surface modes.[21] The assumption that all riders are commuters leads to the upper bound estimates of expected VTTS that are presented in Table 1 (below). This presentation illustrates our concerns that the DEIS could be overstating projected ridership. According to the DEIS, the Baltimore metropolitan statistical area (MSA) has a median household hourly income of $38.69 and the D.C. MSA is $49.13 per hour (2018).[22] As shown in Table 1, SCMAGLEV looks like a good alternative to the Acela. Commuters could spend $8 to save 17 minutes, which is worth an estimated $10.96 – $13.92 in income (i.e., the savings exceed the cost). However, we question whether MARC Train commuters will spend $52.40 more per trip to save $29.02 to $36.85 in time (according to USDOT, this would be less for personal travelers). D.C. commuters may view SCMAGLEV as a good option if the MARC Train trip is 83.2 minutes. The evaluation in Table 1 is highly simplified but facilitates a discussion of tradeoffs to be made by affected individuals, many of whom are identified as EJ and likely would not have the ability to pay (household income below the MSA median; discussed below). Potential differences in parking costs are not included (e.g., MARC monthly ticket holders for BWI Station can park for free). We are cognizant of the statement that "MDOT MTA expects at least 70 percent of all MARC system stations to be at capacity by 2025" (DEIS, p. 2-9). On-time rates and capacity constraints are important issues that can affect trip quality and resulting decisions (e.g., some passengers choose to stand for a shorter express trip (time focused), and others prefer to have a seat and accept a longer trip (comfort focused)). These decisions are affected by how individuals may be able to spend their time while on the train (e.g., teleworking). The Public Transport Subsidy Program also affects trip decisions and needs to be evaluated in the context of SCMAGLEV.[23] We found no mention in the DEIS or Berger (2018) of current subsidies and their role in trip decisions. There was a mention of subsidies as a mitigation option: "Project Sponsor is investigating opportunities for fare subsidies to provide greater access for low-income populations since the introduction of the SCMAGLEV Project would provide an additional

[21] Ibid, p. 13.
[22] "Median household income in the Washington, D.C. MSA [metropolitan statistical area] is approximately $102,180, while in the Baltimore MSA median household income is approximately $80,470" (DEIS, p. 4.6-5). According to the DEIS, these estimates are for 2018. We assumed the standard 2080 hours per year.
[23] https://www.irs.gov/irm/part1/irm_01-032-015

APPENDIX 3 – OFFICE OF POLICY ANALYSIS SPECIFIC COMMENTS		
Page	Section	Comment
		transportation choice between Washington, D.C. and Baltimore" (DEIS, p. 4.5-19).

Table 1. Rail Trip Cost, Estimated Time Savings, and Value of Travel Time Savings (VTTS) from Diversion to SCMAGLEV for a Baltimore and D.C. Commuter

Rail Options	Trip Cost ($)	Increased Trip Cost from Diversion ($)	Trip Time (minutes)	Time Savings from Diversion (minutes)	VTTS from Diversion—Baltimore Median Household Hourly Income ($[a])	VTTS from Diversion—D Median Household Hourly Incor ($[a])
MARC-Low[b]	$7.60[c]	$52.40	60	45	$29.02	$36.85
MARC-High[b]	$7.60[c]	$52.40	83.2	68.2	$43.98	$55.84
Acela	$52.00 [c]	$8.00	32	17	$10.96	$13.92
SCMAGLEV	$60.00	Proposed	15	Proposed		

[a] Time savings x median household hourly income = the income-based value of travel time savings (VTTS) from diversion. The Baltimore MSA has a median household hourly income of $38.69; D.C. MSA is $49.13 per hour (2018). This value assumes all riders are commuters. According to the USDOT, the VTTS for personal travelers would be up to 50% lower.

[b] It is unclear from the DEIS whether the MARC train takes 1 hour or 83.2 minutes. Based on the Penn Line Train Schedule, the trip appears to take 6o minutes from Penn Station to Union Station. Both timeframes are provided.

[c] A MARC trip costs 19 cents per mile and takes just over an hour; an Acela trip costs $1.30 per mile and takes 32 minutes (DEIS, p. 4.6-13). The DEIS uses 40 miles (p. 3-5), $ per mile x number of miles = trip cost.

Appendix 4 U.S. Geological Survey Specific Comments		
Page	Section	Comment
4.10-20	4.10	The DEIS acknowledges that *"the aquifers would experience direct impacts such as disruption within the aquifer and therefore changes in recharge and/or groundwater levels, and indirect impacts such as change in the water supply or increased risk of contamination"* (Section 4.10, Water Resource, page 4.10-20). The DEIS also acknowledges the importance of the aquifers for water supply (page 4.10-20), *"As groundwater is the most significant source of fresh drinking water in Maryland's Coastal Plain, continued ground investigations and agency coordination will be critical to ensuring the SCMAGLEV Project does not adversely affect drinking water quantity and quality"*. The potential effects on the water table, streams, groundwater flow, recharge, and nearby supply wells need to be fully evaluated. Sophisticated computer models with accurate boundary conditions are required to predict the potential long-term effects of these proposed tunnels. Existing USGS groundwater flow computer models include the area of the proposed SCMAGLEV route and could be updated and revised by incorporating estimated tunnel parameters (Andreasen (2007), Raffensperger (2010) and Raffensperger (2021)). The Department recommends the utilization of these existing resources for assessment of project impacts to groundwater resources. The proposed tunnel routes are in the North Atlantic Coastal Plain, one of 61 principal aquifer systems in the United States (Miller, 1999) and a vital source of water for public and private-domestic supply, as well as agricultural, commercial, and industrial needs (Masterson and others, 2015). The Coastal Plain Physiographic Province in Maryland and District of Columbia is underlain by a series of east-southeast sloping deposits of unconsolidated gravel, sand, silt, and clay, forming an eastward-thickening wedge ranging in thickness from the ground surface at the Fall Line to about 8,000 feet deep at Ocean City, Maryland (Vroblesky and Fleck, 1991). Unconfined aquifer conditions exist in outcrop areas near the Fall Line, becoming confined with increasing depth and sequencing of sand rich aquifers with thick clay formations. Three major aquifers in Anne Arundel County, Maryland are the upper Patapsco, lower Patapsco, and Patuxent accounting for approximately 67% of Maryland Coastal Plain groundwater withdrawals in 2008 (Masterson and others, 2016). Average public supply withdrawals by the Anne Arundel County Department of Public Works totaled 26 million gallons per day (mgd) in 2002 and are projected to increase to 73 mgd by 2040 (Andreasen, 2007). The general direction of groundwater in the Patapsco

aquifers is from higher altitude areas in the northwest towards the east/northeast (Achmad, 1991). Groundwater flow in the confined portions of these aquifers is sustained by outcrop area recharge. The estimated proportion of total inflow by outcrop area recharge is 88 percent for the upper Patapsco and 34 percent for the lower Patapsco.

These processes (recharge and eastward flow) occur over long timescales, making the aquifers more susceptible to change or disruption. A USGS study (Plummer and others, 2012) determined that the age of groundwater in the upper Patapsco ranged from modern in the outcrop area to more than 1 million years on the Eastern Shore of Maryland.

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