

## **High-Speed Train On Fast Track To Nowhere**

**Project:** A 520-mile high-speed “bullet” train rail line connecting San Francisco and Los Angeles is 13 years behind schedule and \$44 billion over its original price tag.<sup>1</sup>

**Location:** California

**Recipient:** California State Transportation Agency’s High-Speed Rail Authority

**Original Cost Estimate:** \$33.6 billion in 2008<sup>2</sup>

**Current Cost Estimate:** \$77.3 billion<sup>3</sup>

**Project Began:** Construction began in October 2013<sup>4</sup>

**Original Completion Date:** 2020<sup>5</sup>

**Current Completion Date:** 2033<sup>6</sup>

**Funding Source:** U.S. Department of Transportation Federal Railroad Administration

**Federal Spending:** \$3.5 billion to date.

The project received an initial \$2.6 billion grant in 2010 through the American Recovery and Reinvestment Act and another \$929 million in 2011.<sup>7</sup> Of these amounts, \$3.3 billion is for capital construction funds and \$231 million is for environmental review and preliminary engineering work.<sup>8</sup> The authority is pursuing additional federal assistance, including grants and loans.<sup>9</sup> Over \$38 billion in federal funds will be needed to complete Phase 1 of the project, according to the authority’s finance plan.<sup>10</sup>

**Problems:** The State Auditor released a scathing report in November 2018 concluding that the California High-Speed Rail Authority “cannot demonstrate that the hundreds of millions of dollars it has spent to date on the contracts we reviewed has been necessary or appropriate.”<sup>11</sup> Additionally, “flawed decision making” and “poor contract management” are contributing “to billions of dollars in cost overruns and delays in the system’s construction.”<sup>12</sup>

The auditor blames the state for beginning construction prematurely in October 2013 despite known risks, not acquiring sufficient land, failing to determine how to relocate utility systems, and not obtaining agreements with external stakeholders.<sup>13</sup> “These unmitigated risks have contributed to \$600 million in costs overruns thus far for the three active Central Valley construction projects, with another \$1.6 billion in additional costs needed to complete the projects.”<sup>14</sup>

The Rail Authority “cited the terms of a 2010 federal grant—which originally required construction to be complete by 2017—as the primary factor in its decision to begin construction when it did.”<sup>15</sup> The State Auditor “determined that even with a grant deadline extension until December 2022, the Authority could miss the new deadline unless Central Valley construction progresses twice as fast as it has to date.”<sup>16</sup>

Construction began two years behind schedule due to political, legal, logistical, environmental, and financial problems.<sup>17</sup> These setbacks “have forced contractors to leave equipment idle, which is likely to result in multimillion-dollar claims of losses,” according to the *Los Angeles Times*.<sup>18</sup>

In his 2019 State of the State Address, the governor said he would both scale back the project and “push for more federal funding.”<sup>19</sup> The governor stated, “let’s be real. The project, as currently planned, would cost too

much and take too long. There's been too little oversight and not enough transparency. Right now, there simply isn't a path to get from Sacramento to San Diego, let alone from San Francisco to LA. I wish there were."<sup>20</sup>

The U.S. Department of Transportation has since announced plans to cancel the \$929 million grant because the state has violated terms of the agreement—including falling \$100 million short in the state funding contribution—and is unlikely to complete project by 2022.<sup>21</sup> The federal government may also try to recover the \$2.6 billion grant.<sup>22</sup>

**Additional Comments:** The rail line is the “largest public-works” project underway in the U.S.<sup>23</sup> “It is expected to be one of the most expensive transportation projects undertaken in the United States,” according to GAO.<sup>24</sup>

When told of the increased cost and delays to finish the train, only one-third of Californians supported continuing construction while nearly half wanted it stopped, according to a 2018 USC Dornsife/*Los Angeles Times* poll.<sup>25</sup>



**A financial train wreck:** The California bullet train is more than a decade behind schedule and \$44 billion over budget.

## **Subway Tunnel Keeps Digging A Deeper Hole**

**Project:** The East Side Access project to connect New York City's subway between Long Island and Grand Central Station is nine years behind schedule and almost \$5 billion over budget.

**Location:** New York City, New York

**Recipient:** New York Metropolitan Transportation Authority (MTA)

**Original Cost Estimate:** \$4.3 billion in 1999 and revised upward to \$6.3 billion in 2006 when the Federal Transit Administration (FTA) authorized a Full Funding Grant Agreement<sup>26</sup>

**Current Cost Estimate:** \$11.1 billion<sup>27</sup>

**Project Began:** 2007<sup>28</sup>

**Original Completion Date:** 2009 in 1999 and revised to December 2013 in 2006<sup>29</sup>

**Current Completion Date:** December 2022<sup>30</sup>

**Funding Source:** U.S. Department of Transportation Federal Transit Administration

**Federal Spending:** \$2.7 billion<sup>31</sup>

**Problems:** The East Side Access, which will add more than 8 miles of tunnels, an 8-track terminal and concourse, and 25,000 square feet of retail space,<sup>32</sup> has been dubbed “the most expensive mile of subway track on Earth,” by *The New York Times* (NYT).<sup>33</sup> The rail line is costing “nearly \$3.5 billion for each new mile of track — seven times the average elsewhere in the world.”<sup>34</sup> One tunnel is costing \$1 million per foot, according to one of the project's chief engineers.<sup>35</sup>

A “discrepancy” discovered by an accountant revealed that 200 employees who apparently had no actual job were being paid \$1,000 every day.<sup>36</sup> “Nobody knew what those people were doing, if they were doing anything,” admits the MTA's head of construction at the time.<sup>37</sup> The unneeded employees were laid off, but it could not be determined how long they had been on the payroll.<sup>38</sup>

The city's transit authority is paying “the highest construction costs in the world” while cutting back “on core subway maintenance.”<sup>39</sup>

MTA “almost never punishes vendors for spending too much or taking too long and local officials, “mired in bureaucracy, have not acted to curb the costs,.” according to a *NYT* analysis.<sup>40</sup>

The owner of the Robbins Company, which manufactures equipment used for East Side Access, says “they could do twice as many expansion projects and still have more money for maintenance” if the authority was more cost efficient.<sup>41</sup>

Most of the project's cost overruns “occurred after the MTA entered into a full-funding agreement with the federal government in 2006,” according to the New York State Comptroller.<sup>42</sup>

Members of New York's congressional delegation have been seeking additional federal assistance for the East Side Access project.<sup>43</sup>

**Additional Comments:** The Department of Transportation called the amount being sunk in the East Side Access “the largest-ever federal investment in a single transit project” in 2006.<sup>44</sup> Today, the “megaproject” remains “one of the largest transportation infrastructure projects currently underway in the United States,” according to the New York Metropolitan Transportation Authority.<sup>45</sup>

When announcing the award in 2006, the U.S. Secretary of Transportation stated, “for a city that gives meaning to the phrase time is money, hundreds of thousands of commuters shouldn’t have to waste both.”<sup>46</sup> With the project now nine years behind schedule and almost \$5 billion over budget, the city is wasting time and money.



Digging a deeper hole: Construction of new tunnels to extend New York City’s subway system is now nine years behind schedule and almost \$5 billion over budget.

## **Waste Clean Up Is A Total Mess**

**Project:** The cleanup of radioactive waste at a site in Washington state where plutonium was produced during the Cold War began decades ago, but has not treated any waste as of yet. As a result, the project is 25 years behind schedule and may end up costing \$100 billion more than originally estimated.

**Location:** Washington state

**Recipient:** Department of Energy and contractors

**Original Cost Estimate:** \$4.3 billion to complete the waste treatment plant (2000 estimate)<sup>47</sup> and \$47- \$50 billion to complete the cleanup<sup>48</sup>

**Current Cost Estimate:** The waste treatment plant is now expected to cost \$16.8 billion,<sup>49</sup> and the amount to complete the entire project is more than \$141 billion<sup>50</sup>

**Project Began:** 1989<sup>51</sup> (The project has been repeatedly canceled and restarted<sup>52</sup>)

**Original Completion Date:** The plant was required to begin operating in 2011 with the tank waste treatment to be completed by 2028<sup>53</sup>

**Current Completion Date:** Operation of the plant has been delayed until the end of 2036<sup>54</sup> with most of the cleanup finished by 2060 and the entire project completed before the end of 2090<sup>55</sup>

**Funding Source:** Department of Energy

**Federal Spending:** More than \$19 billion has already been spent as of 2015<sup>56</sup> and the project is costing \$2.5 billion a year, but the agency says more than \$4 billion is needed per year for the duration of the mission to meet the “scheduled milestones.”<sup>57</sup>

**Problems:** The management of Hanford is a mess and needs to be cleaned up as much as the hazardous materials at the site.

DOE has already spent more than \$19 billion on the Hanford cleanup project since it began 30 years ago, but has not even begun to treat the nuclear waste at the site.<sup>58</sup>

There are 177 tanks containing 55 million gallons of radioactive waste at Hanford. Just three gallons have been treated to date, as part of a technology “demonstration” test in December 2017.<sup>59</sup>

The cleanup “could take 20 to 30 years longer than projected,” according to the Hanford Advisory Board.<sup>60</sup>

The design of the facility intended to treat the waste is being made up as it is being constructed, the remedy chosen to immobilize the waste is twice as costly as an alternative method, no waste has been treated as of yet despite spending tens of billions of dollars over the past three decades, and millions of dollars have been lost to fraud and abuse, including paying employees for hours not worked, overcompensating contractors in exchange for kickbacks, awarding a bonus to a contractor for an ineffective product, billing the government for personal appliances, and spending federal funds to lobby Congress for more federal funds.

Numerous independent reviews blame poor management for the delays and cost overruns. GAO estimates the cost increased by nearly \$130 billion from fiscal year 2014 to 2018, “in part because of contract and project management problems.”<sup>61</sup> The DOE Office of Inspector General (OIG) says, “the Hanford Site has been

plagued with mismanagement, poor internal controls, and fraudulent activities, resulting in monetary impacts totaling hundreds of millions of dollars.”<sup>62</sup>

The Waste Treatment and Immobilization Plant (WTP) “is being constructed under a design-build contract,” in which plant design, construction, and technology development “occur simultaneously rather than sequentially.” This arrangement has led to cost and schedule overruns,” yet DOE continues to use it for the WTP, according to GAO.<sup>63</sup>

Nearly \$20 billion could be saved by simply using a different remedy for the waste buried at Hanford.<sup>64</sup> Closing the tanks and filling them with a cement-like material, which is how DOE is handling radioactive waste elsewhere, would have cost \$19 billion while the approach that will be employed at Hanford in which tanks will be dug up and encased in glass is expected to cost \$37 billion.<sup>65</sup>

A contractor that produced large tanks intended to contain radioactive waste, known as vessels, was paid a \$30 million bonus, or incentive fee, despite failing to meet quality assurance requirements.<sup>66</sup> While DOE requested a refund of a \$15 million bonus paid for a vessel that was defective, the money was never repaid.<sup>67</sup> The importance of these “components cannot be overstated,” warned the DOE OIG.<sup>68</sup> “Premature failure of these components could potentially impact safety, contaminate large portions of a multi-billion-dollar facility, and interrupt waste processing for an unknown period of time.”<sup>69</sup>

Federal funds were illegally spent “to pay for a comprehensive, multi-year lobbying campaign of Congress and other federal officials for continued funding at the WTP.”<sup>70</sup>

For nearly a decade, some employees were being paid for hours that they did not work.<sup>71</sup>

An illegal kickback scheme gave favorable treatment and inflated payments to a contractor.<sup>72</sup>

As part of one scheme, the government was charged and paid more than twice the value of what goods purchased were worth.<sup>73</sup>

The federal government was charged for televisions and home appliances for personal use.<sup>74</sup> One employee made purchases from his family’s company, but did not deliver the items.<sup>75</sup>

In addition to the rising costs, the environmental and health risks continue to increase with the delays. The aging underground storage tanks of hazardous radioactive waste—some of which have already leaked—continue to deteriorate and threaten the groundwater and the nearby Columbia River.<sup>76</sup>

Some whistleblowers who worked at the site claim they suffered retaliation for raising safety concerns.<sup>77 78 79</sup>

### **Additional Comments:**

DOE’s cost estimate to cleanup nuclear waste in the U.S. increased \$110.2 billion in a single year, primarily due to the costs of the Hanford site.<sup>80</sup> The amount jumped from \$383.78 billion in Fiscal Year 2017 to \$493.96 billion in FY ‘18.<sup>81</sup> Eighty percent of the increase is attributed to Hanford.<sup>82</sup>

DOE’s estimates for completion “are not reliable because they do not meet industry best practices,” according to GAO.<sup>83</sup> “Without reliable estimates that reflect best practices, DOE may be committing to courses of action that will require undisclosed future resources and will commit DOE to project time frames it may be unable to meet,” GAO concludes.<sup>84</sup>

“The removal and stabilization of these wastes at Hanford by mixing them with molten glass, at an estimated cost of as much as \$72.3 billion, represents the single largest, most expensive, and potentially riskiest nuclear

cleanup project ever undertaken by the United States,” explains a former DOE senior policy advisor.<sup>85</sup> “It’s roughly comparable to the Apollo moon program in cost and risk, except there’s no moon.”<sup>86</sup>



The management of the waste cleanup at Hanford is a total mess.



A contractor delivered a container to hold radioactive waste that was later found to be defective and a potential threat to health and safety, but was still awarded with a \$15 million bonus.

## **Grounded Moon Rocket Costs Soar**

**Project:** The rocket intended to return astronauts to the moon has been grounded by repeated delays while its costs are soaring billions of dollars over budget due to the “poor performance” of a contractor that continues to be paid big bonuses by NASA.

**Location:** Managed out of Marshall Space Flight Center in Alabama with work in 43 states

**Recipient:** Boeing is the main contractor with more than 1,100 contractors

**Original Cost Estimate:** \$6.2 billion in 2012<sup>87</sup>

**Current Cost Estimate:** At least \$8.9 billion projected in 2018<sup>88</sup>

**Project Began:** 2012

**Original Completion Date:** June 2017 for delivery of the first stage; The first unmanned mission was planned for December 2017 with the first crewed mission was projected to launch in mid-2021<sup>89</sup>

**Current Completion Date:** December 2019 for delivery of the first stage; The first unmanned mission has been rescheduled for mid-2020 and the first crewed mission is now planned for mid-2022<sup>90</sup>

**Funding Source:** National Aeronautics and Space Administration

**Federal Spending:** \$5.3 billion as of August 2018<sup>91</sup>

### **Problems:**

NASA will spend at least \$8.9 billion on the fuel tanks and supporting infrastructure for the Space Launch System (SLS) of the next manned space vehicle by the end of 2021—double the amount planned—while delivery of the rockets has slipped more than two years from June 2017 to December 2019.<sup>92</sup>

Billions of dollars more will be necessary to get the project off of the ground. An additional \$1.2 billion is needed to complete and deliver the fuel tanks by 2019 and meet the June 2020 launch date, according to calculations by the NASA Office of Inspector General (OIG).<sup>93</sup> This amount does not include “the billions more required to complete work” on other components of the system.<sup>94</sup>

The cost increases and schedule delays “can be traced largely to management, technical, and infrastructure issues driven by Boeing’s poor performance,” according to the OIG, as well as “poor contract management practices” by NASA.<sup>95</sup>

“Flaws in NASA’s evaluation of Boeing’s performance” are “inflating the contractor’s scores and leading to overly generous award fees.”<sup>96</sup> As a result, NASA deemed Boeing’s performance “excellent” in three evaluations and “very good” in three others and paid \$323 million in bonus awards despite the cost overages and schedule delays.<sup>97</sup>

As designed, the contract makes it difficult for the agency to track expenditures which is affecting determination of pricing for future work on the project.<sup>98</sup>

NASA exceeded its legal spending authority and approved \$321.7 million that was never authorized.<sup>99</sup>

Because the launch system has not yet undergone the testing stage, the OIG warns, “Boeing’s cost and schedule challenges are likely to worsen.”<sup>100</sup>

As of August 2018, \$5.3 billion out of \$6.2 billion allocated for the Boeing contract had already been expended and NASA expects Boeing to have exhausted the full funding amount in early 2019, three years before the contract is supposed to end.<sup>101</sup> As a result, the program “will require a major increase in funding,” according to the OIG, which projects “at least \$8.9 billion” will be needed—double the amount initially planned.<sup>102</sup>

Delivery of the first stage of the rocket has “slipped 2 ½ years from June 2017 to December 2019 and may slip further,” the OIG warns.<sup>103</sup>

The delays are also “jeopardizing planned launch dates” for other NASA missions that will use the rocket, including a mission to one of Jupiter’s moons in 2022.<sup>104</sup>

NASA has not released the per-flight cost estimates of the SLS rocket, but some estimates “peg it at \$1.5 to \$2.5 billion per launch. The cost is so high that it effectively precludes more than one to two SLS launches per year.”<sup>105</sup>

### **Additional Comments:**

The SLS is a leftover of the Constellation project that was canceled by President Barack Obama<sup>106</sup> after an independent commission found cost increases and schedule delays made it “unsustainable.”<sup>107</sup> Despite its own delays and cost overruns, Congress has stood by the SLS, causing critics to deride it as the “Senate Launch System,” that “serves more as a jobs program in key congressional districts.”<sup>108</sup>



NASA’s manned space rocket will not be getting off the ground any time soon but its costs are soaring skyward.

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- <sup>1</sup> Ralph Vartabedian, "State audit blames bullet train mismanagement for delays and price hikes," Los Angeles Times, November 15, 2018; <https://www.latimes.com/local/california/la-me-bullet-train-audit-20181115-story.html>.
- <sup>2</sup> "Report to the Legislature," California High-Speed Rail Authority, December 2009; [http://www.hsr.ca.gov/docs/about/business\\_plans/BPlan\\_2009\\_Legis\\_FullRpt.pdf](http://www.hsr.ca.gov/docs/about/business_plans/BPlan_2009_Legis_FullRpt.pdf).
- <sup>3</sup> "2018 Business Plan," California High-Speed Rail Authority, June 1, 2018; [http://www.hsr.ca.gov/docs/about/business\\_plans/2018\\_BusinessPlan.pdf](http://www.hsr.ca.gov/docs/about/business_plans/2018_BusinessPlan.pdf).
- <sup>4</sup> "California High-Speed Rail Authority: Its Flawed Decision Making and Poor Contract Management Have Contributed to Billions in Cost Overruns and Delays in the System's Construction," report number 2018-108, California State Auditor, November 15, 2018; <https://www.bsa.ca.gov/pdfs/reports/2018-108.pdf>.
- <sup>5</sup> "Report to the Legislature," California High-Speed Rail Authority, December 2009; [http://www.hsr.ca.gov/docs/about/business\\_plans/BPlan\\_2009\\_Legis\\_FullRpt.pdf](http://www.hsr.ca.gov/docs/about/business_plans/BPlan_2009_Legis_FullRpt.pdf).
- <sup>6</sup> "California High-Speed Rail Authority: Its Flawed Decision Making and Poor Contract Management Have Contributed to Billions in Cost Overruns and Delays in the System's Construction," report number 2018-108, California State Auditor, November 15, 2018; <https://www.bsa.ca.gov/pdfs/reports/2018-108.pdf>.
- <sup>7</sup> "California High-Speed Rail Authority: Its Flawed Decision Making and Poor Contract Management Have Contributed to Billions in Cost Overruns and Delays in the System's Construction," introduction to report number 2018-108, California State Auditor, November 15, 2018; <https://www.auditor.ca.gov/reports/2018-108/introduction.html>.
- <sup>8</sup> "California High Speed Rail; Project Estimates Could Be Improved to Better Inform Future Decisions," Government Accountability Office, March 2013; <https://www.gao.gov/assets/660/653401.pdf>.
- <sup>9</sup> "California High-Speed Rail Authority: Its Flawed Decision Making and Poor Contract Management Have Contributed to Billions in Cost Overruns and Delays in the System's Construction," public letter for report number 2018-108, California State Auditor, November 15, 2018; <https://www.auditor.ca.gov/reports/2018-108/index.html>.
- <sup>10</sup> "California High Speed Rail; Project Estimates Could Be Improved to Better Inform Future Decisions," Government Accountability Office, March 2013; <https://www.gao.gov/assets/660/653401.pdf>.
- <sup>11</sup> "California High-Speed Rail Authority: Its Flawed Decision Making and Poor Contract Management Have Contributed to Billions in Cost Overruns and Delays in the System's Construction," summary for report number 2018-108, California State Auditor, November 15, 2018; <https://www.auditor.ca.gov/reports/2018-108/summary.html>.
- <sup>12</sup> "California High-Speed Rail Authority: Its Flawed Decision Making and Poor Contract Management Have Contributed to Billions in Cost Overruns and Delays in the System's Construction," public letter for report number 2018-108, California State Auditor, November 15, 2018; <https://www.auditor.ca.gov/reports/2018-108/index.html>.
- <sup>13</sup> "California High-Speed Rail Authority: Its Flawed Decision Making and Poor Contract Management Have Contributed to Billions in Cost Overruns and Delays in the System's Construction," public letter for report number 2018-108, California State Auditor, November 15, 2018; <https://www.auditor.ca.gov/reports/2018-108/index.html>.
- <sup>14</sup> "California High-Speed Rail Authority: Its Flawed Decision Making and Poor Contract Management Have Contributed to Billions in Cost Overruns and Delays in the System's Construction," public letter for report number 2018-108, California State Auditor, November 15, 2018; <https://www.auditor.ca.gov/reports/2018-108/index.html>.
- <sup>15</sup> "California High-Speed Rail Authority: Its Flawed Decision Making and Poor Contract Management Have Contributed to Billions in Cost Overruns and Delays in the System's Construction," public letter for report number 2018-108, California State Auditor, November 15, 2018; <https://www.auditor.ca.gov/reports/2018-108/index.html>.
- <sup>16</sup> "California High-Speed Rail Authority: Its Flawed Decision Making and Poor Contract Management Have Contributed to Billions in Cost Overruns and Delays in the System's Construction," public letter for report number 2018-108, California State Auditor, November 15, 2018; <https://www.auditor.ca.gov/reports/2018-108/index.html>.
- <sup>17</sup> Ralph Vartabedian, "Key construction deadline for California bullet train pushed back four years," Los Angeles Times, May 18, 2016; <http://www.latimes.com/local/california/la-me-bullet-train-warning-20160518-snap-story.html>.
- <sup>18</sup> Ralph Vartabedian, "Key construction deadline for California bullet train pushed back four years," Los Angeles Times, May 18, 2016; <http://www.latimes.com/local/california/la-me-bullet-train-warning-20160518-snap-story.html>.
- <sup>19</sup> California Governor Gavin Newsom, State of the State Address, February 12, 2019; <https://www.gov.ca.gov/2019/02/12/state-of-the-state-address/>.
- <sup>20</sup> California Governor Gavin Newsom, State of the State Address, February 12, 2019; <https://www.gov.ca.gov/2019/02/12/state-of-the-state-address/>.
- <sup>21</sup> Correspondence from Federal Railroad Administration Administrator Ronald Batory to California High-Speed Rail Authority Chief Executive Brian Kelly, February 19, 2019; <file:///C:/Users/rf44444/Downloads/Batory%20Letter%20to%20Kelly%20re%20CAHSR%20Termination%20021919..pdf>.
- <sup>22</sup> Ralph Vartabedian and Matthew Ormseth, "Trump administration to cancel \$929 million in California high-speed rail funding," Los Angeles Times, February 19, 2019; <https://www.latimes.com/local/lanow/la-me-high-speed-rail-20190219-story.html>.
- <sup>23</sup> "Taxpayers could pay dearly for California's high-speed-train dreams," The Economist, May 27, 2016; <http://www.economist.com/news/science-and-technology/21695237-taxpayers-could-pay-dearly-californias-high-speed-dreams-biting-bullet>.
- <sup>24</sup> "California High Speed Rail; Project Estimates Could Be Improved to Better Inform Future Decisions," Government Accountability Office, March 2013; <https://www.gao.gov/assets/660/653401.pdf>.
- <sup>25</sup> Jim Key, "Voters want gas tax repealed, have mixed feelings about high-speed rail before knowing estimated costs," USC Dornsife, May 25, 2018; <https://dornsife.usc.edu/news/stories/2814/poll-on-gas-tax-repeal-high-speed-rail/>.
- <sup>26</sup> "Metropolitan Transportation Authority: East Side Access Cost Overruns," New York State Comptroller, March 2013; <https://www.osc.state.ny.us/osdc/rpt12-2013.pdf>.
- <sup>27</sup> "Project Overview: East Side Access," New York Metropolitan Transportation Authority website, accessed January 16, 2019; [http://web.mta.info/capital/esa\\_alt.html](http://web.mta.info/capital/esa_alt.html).

- <sup>28</sup> Scott Brinton, "East Side Access transforming the LIRR," Long Island Herald, August 21, 2018; <http://www.liherald.com/stories/east-side-access-transforming-the-long-island-rail-road.106293> .
- <sup>29</sup> "Metropolitan Transportation Authority: East Side Access Cost Overruns," New York State Comptroller, March 2013; <https://www.osc.state.ny.us/osdc/rpt12-2013.pdf> .
- <sup>30</sup> "Project Overview: East Side Access," New York Metropolitan Transportation Authority website, accessed January 16, 2019; [http://web.mta.info/capital/esa\\_alt.html](http://web.mta.info/capital/esa_alt.html).
- <sup>31</sup> "Metropolitan Transportation Authority: East Side Access Cost Overruns," New York State Comptroller, March 2013; <https://www.osc.state.ny.us/osdc/rpt12-2013.pdf> .
- <sup>32</sup> "Project Overview: East Side Access," New York Metropolitan Transportation Authority website, accessed January 16, 2019; [http://web.mta.info/capital/esa\\_alt.html](http://web.mta.info/capital/esa_alt.html).
- <sup>33</sup> Brian M. Rosenthal, "The Most Expensive Mile of Subway Track on Earth," The New York Times, December 28, 2017; <https://www.nytimes.com/2017/12/28/nyregion/new-york-subway-construction-costs.html>.
- <sup>34</sup> Brian M. Rosenthal, "The Most Expensive Mile of Subway Track on Earth," The New York Times, December 28, 2017; <https://www.nytimes.com/2017/12/28/nyregion/new-york-subway-construction-costs.html>.
- <sup>35</sup> Verena Dobnik, "Massive East Side Access Project Rolling On Under Grand Central," WNBC-TV – NBC News 4 New York, November 4, 2015; <https://www.nbcnewyork.com/news/local/MTA-East-Side-Access-Project-Grand-Central-Terminal-Long-Island-Rail-Road-Tour-340356972.html> .
- <sup>36</sup> Brian M. Rosenthal, "The Most Expensive Mile of Subway Track on Earth," The New York Times, December 28, 2017; <https://www.nytimes.com/2017/12/28/nyregion/new-york-subway-construction-costs.html>.
- <sup>37</sup> Brian M. Rosenthal, "The Most Expensive Mile of Subway Track on Earth," The New York Times, December 28, 2017; <https://www.nytimes.com/2017/12/28/nyregion/new-york-subway-construction-costs.html>.
- <sup>38</sup> Brian M. Rosenthal, "The Most Expensive Mile of Subway Track on Earth," The New York Times, December 28, 2017; <https://www.nytimes.com/2017/12/28/nyregion/new-york-subway-construction-costs.html>.
- <sup>39</sup> Brian M. Rosenthal, "The Most Expensive Mile of Subway Track on Earth," The New York Times, December 28, 2017; <https://www.nytimes.com/2017/12/28/nyregion/new-york-subway-construction-costs.html>.
- <sup>40</sup> Brian M. Rosenthal, "The Most Expensive Mile of Subway Track on Earth," The New York Times, December 28, 2017; <https://www.nytimes.com/2017/12/28/nyregion/new-york-subway-construction-costs.html>.
- <sup>41</sup> Brian M. Rosenthal, "The Most Expensive Mile of Subway Track on Earth," The New York Times, December 28, 2017; <https://www.nytimes.com/2017/12/28/nyregion/new-york-subway-construction-costs.html>.
- <sup>42</sup> "Metropolitan Transportation Authority: East Side Access Cost Overruns," New York State Comptroller, March 2013; <https://www.osc.state.ny.us/osdc/rpt12-2013.pdf> .
- <sup>43</sup> Philip Newman, "Schumer asks feds to fund East Side Access," QNS Times Ledger News, June 28, 2011; <https://qns.com/story/2011/06/28/schumer-asks-feds-to-fund-east-side-access/> .
- "Schumer, in Personal Call to Ray LaHood, Continues to Push for \$2.2 Billion in Funds Forfeited by New Jersey to Finish East Side Access Project," Office of Senator Charles E. Schumer, July 28, 2011; <https://www.schumer.senate.gov/Newsroom/record.cfm?id=333652> .
- "SCHUMER: UPSTATE NEW YORK'S AGING INFRASTRUCTURE IS FALLING APART; SENATOR ANNOUNCES MAJOR INFRASTRUCTURE PROPOSAL THAT WILL PAVE THE WAY FOR DESPERATELY NEEDED REPAIRS – WITHOUT CRUSHING LOCAL TAXPAYERS," Office of Senator Charles E. Schumer, March 7, 2018; [https://www.schumer.senate.gov/newsroom/press-releases/schumer-upstate-new-yorks-aging-infrastructure-is-falling-apart-senator-announces-major-infrastructure-proposal-that-will-pave-the-way-for-desperately-needed-repairs\\_without-crushing-local-taxpayers](https://www.schumer.senate.gov/newsroom/press-releases/schumer-upstate-new-yorks-aging-infrastructure-is-falling-apart-senator-announces-major-infrastructure-proposal-that-will-pave-the-way-for-desperately-needed-repairs_without-crushing-local-taxpayers) .
- <sup>44</sup> "U.S. Transportation Secretary Signs Record \$2.6 Billion Agreement to Fund New Tunnel Network To Give Long Island Commuters Direct Access to Grand Central Station," U.S. Department of Transportation, December 18, 2006; <https://web.archive.org/web/20070103003520/http://www.dot.gov/affairs/dot11706.htm>.
- <sup>45</sup> "Project Overview: East Side Access," New York Metropolitan Transportation Authority website, accessed January 16, 2019; [http://web.mta.info/capital/esa\\_alt.html](http://web.mta.info/capital/esa_alt.html).
- <sup>46</sup> "U.S. Transportation Secretary Signs Record \$2.6 Billion Agreement to Fund New Tunnel Network To Give Long Island Commuters Direct Access to Grand Central Station," U.S. Department of Transportation, December 18, 2006; <https://web.archive.org/web/20070103003520/http://www.dot.gov/affairs/dot11706.htm>.
- <sup>47</sup> "HANFORD WASTE TREATMENT: DOE Needs to Evaluate Alternatives to Recently Proposed Projects and Address Technical and Management Challenges," Government Accountability Office, May 2015; <https://www.gao.gov/assets/680/670080.pdf>.
- <sup>48</sup> Blaine Harden, "Nuclear Reactions," Washington Post Magazine, May 5, 1996; [https://www.washingtonpost.com/archive/lifestyle/magazine/1996/05/05/nuclear-reactions/36e5fbc8-0d1f-4cbb-9958-6ca415fbc785/?utm\\_term=.47c85eafa9c5](https://www.washingtonpost.com/archive/lifestyle/magazine/1996/05/05/nuclear-reactions/36e5fbc8-0d1f-4cbb-9958-6ca415fbc785/?utm_term=.47c85eafa9c5).
- <sup>49</sup> "HANFORD WASTE TREATMENT PLANT: DOE Needs to Take Further Actions to Address Weaknesses in Its Quality Assurance Program," Government Accountability Office, April 2018; <https://www.gao.gov/assets/700/691422.pdf> .
- <sup>50</sup> "DEPARTMENT OF ENERGY: Program-Wide Strategy and Better Reporting Needed to Address Growing Environmental Cleanup Liability," Government Accountability Office, January 2019; <https://www.gao.gov/assets/700/696632.pdf>.
- <sup>51</sup> "HANFORD WASTE TREATMENT: DOE Needs to Evaluate Alternatives to Recently Proposed Projects and Address Technical and Management Challenges," Government Accountability Office, May 2015; <http://www.gao.gov/assets/680/670080.pdf>.
- <sup>52</sup> "HANFORD WASTE TREATMENT: DOE Needs to Evaluate Alternatives to Recently Proposed Projects and Address Technical and Management Challenges," Government Accountability Office, May 2015; <http://www.gao.gov/assets/680/670080.pdf>.
- <sup>53</sup> "HANFORD," Washington State Office of Attorney General website, accessed January 31, 2019; <https://www.atg.wa.gov/hanford>.
- <sup>54</sup> "NUCLEAR WASTE: Opportunities Exist to Reduce Risks and Costs by Evaluating Different Waste Treatment Approaches at Hanford," Government Accountability Office, May 2017; <https://www.gao.gov/assets/690/684578.pdf>.
- <sup>55</sup> "2014 Hanford Lifecycle Scope, Schedule and Cost Report," Tri-Party Agreement, U.S. Department of Energy, Washington State Department of Ecology, and U.S. Environmental Protection Agency, February 2014; [https://www.hanford.gov/files.cfm/2014\\_Fact\\_Sheet\\_final\\_021814.pdf](https://www.hanford.gov/files.cfm/2014_Fact_Sheet_final_021814.pdf).
- <sup>56</sup> "HANFORD WASTE TREATMENT: DOE Needs to Evaluate Alternatives to Recently Proposed Projects and Address Technical and Management Challenges," Government Accountability Office, May 2015; <https://www.gao.gov/assets/680/670080.pdf>.
- <sup>57</sup> "DEPARTMENT OF ENERGY: Program-Wide Strategy and Better Reporting Needed to Address Growing Environmental Cleanup Liability," Government Accountability Office, January 2019; <https://www.gao.gov/assets/700/696632.pdf>.

<sup>58</sup> “NUCLEAR WASTE: Opportunities Exist to Reduce Risks and Costs by Evaluating Different Waste Treatment Approaches at Hanford,” Government Accountability Office, May 2017; <https://www.gao.gov/assets/690/684578.pdf>.

<sup>59</sup> “DEPARTMENT OF ENERGY: Program-Wide Strategy and Better Reporting Needed to Address Growing Environmental Cleanup Liability,” Government Accountability Office, January 2019; <https://www.gao.gov/assets/700/696632.pdf>.

<sup>60</sup> Annette Cary, “\$107.7 billion needed to finish Hanford cleanup,” Tri-City Herald, February 22, 2016; <https://www.tri-cityherald.com/news/local/hanford/article61912837.html>.

<sup>61</sup> “DEPARTMENT OF ENERGY: Program-Wide Strategy and Better Reporting Needed to Address Growing Environmental Cleanup Liability,” Government Accountability Office, January 2019; <https://www.gao.gov/assets/700/696632.pdf>.

<sup>62</sup> “Compilation of Challenges and Previously Reported Key Findings at the Hanford Site for Fiscal Years 2012-2018,” Department of Energy Office of Inspector General, November 2, 2018; <https://www.energy.gov/sites/prod/files/2018/11/f57/DOE-OIG-19-04.pdf>.

<sup>63</sup> “HANFORD WASTE TREATMENT: DOE Needs to Evaluate Alternatives to Recently Proposed Projects and Address Technical and Management Challenges,” Government Accountability Office, May 2015; <http://www.gao.gov/assets/680/670080.pdf>.

<sup>64</sup> The two main remedies that were considered were (1) to close the tanks in place by filling them with a cement-like material—called grout—and covering them with soil or (2) to exhume, dismantle, and prepare the tanks for disposal after removing all of the radioactive waste. According to a 2014 DOE analysis, closing Hanford’s 149 single-shell tanks—those tanks with a single container—in place would cost \$19 billion, or \$18 billion less than the costs of removing the waste and preparing the 149 tanks for disposal (\$19 billion versus \$37 billion, respectively). “DEPARTMENT OF ENERGY: Program-Wide Strategy and Better Reporting Needed to Address Growing Environmental Cleanup Liability,” Government Accountability Office, January 2019; <https://www.gao.gov/assets/700/696632.pdf>.

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<sup>66</sup> “Special Report: Compilation of Challenges and Previously Reported Key Findings at the Hanford Site for Fiscal Years 2012-2018,” Department of Energy Office of Inspector General, November 2, 2018; <https://www.energy.gov/sites/prod/files/2018/11/f57/DOE-OIG-19-04.pdf>.

<sup>67</sup> “Special Report: Compilation of Challenges and Previously Reported Key Findings at the Hanford Site for Fiscal Years 2012-2018,” Department of Energy Office of Inspector General, November 2, 2018; <https://www.energy.gov/sites/prod/files/2018/11/f57/DOE-OIG-19-04.pdf>.

<sup>68</sup> “Special Report: Compilation of Challenges and Previously Reported Key Findings at the Hanford Site for Fiscal Years 2012-2018,” Department of Energy Office of Inspector General, November 2, 2018; <https://www.energy.gov/sites/prod/files/2018/11/f57/DOE-OIG-19-04.pdf>.

<sup>69</sup> “Special Report: Compilation of Challenges and Previously Reported Key Findings at the Hanford Site for Fiscal Years 2012-2018,” Department of Energy Office of Inspector General, November 2, 2018; <https://www.energy.gov/sites/prod/files/2018/11/f57/DOE-OIG-19-04.pdf>.

<sup>70</sup> The Department of Justice settled reached an out of court settlement with Bechtel National Inc. and Bechtel Corp., which agreed to pay \$125 million to resolve the charges. “United States Settles Lawsuit Against Energy Department Contractors for Knowingly Mischarging Costs on Contract at Nuclear Waste Treatment Plant,” U.S. Department of Justice Office of Public Affairs, November 23, 2016; <https://www.justice.gov/opa/pr/united-states-settles-lawsuit-against-energy-department-contractors-knowingly-mischarging>.

<sup>71</sup> “Special Report: Compilation of Challenges and Previously Reported Key Findings at the Hanford Site for Fiscal Years 2012-2018,” Department of Energy Office of Inspector General, November 2, 2018; <https://www.energy.gov/sites/prod/files/2018/11/f57/DOE-OIG-19-04.pdf>.

<sup>72</sup> “Special Report: Compilation of Challenges and Previously Reported Key Findings at the Hanford Site for Fiscal Years 2012-2018,” Department of Energy Office of Inspector General, November 2, 2018; <https://www.energy.gov/sites/prod/files/2018/11/f57/DOE-OIG-19-04.pdf>.

<sup>73</sup> “Colorado-Based CH2M Hill Agrees to Pay United States \$1.5 Million to Resolve False Claims Act and Anti-Kickback Act Liability; Company Was Contractor at Hanford Nuclear Site in Washington State,” Department of Justice Office of Public Affairs, September 22, 2011; <https://www.justice.gov/opa/pr/colorado-based-ch2m-hill-agrees-pay-united-states-1.5-million-resolve-false-claims-act-and>.

<sup>74</sup> Annette Cary, “Billions are spent at Hanford each year. Report highlights risk of fraud and mismanagement,” Tri-City Herald, November 8, 2018; <https://www.tri-cityherald.com/news/local/article221357720.html>.

<sup>75</sup> Annette Cary, “Billions are spent at Hanford each year. Report highlights risk of fraud and mismanagement,” Tri-City Herald, November 8, 2018; <https://www.tri-cityherald.com/news/local/article221357720.html>.

<sup>76</sup> Nicholas K. Geranios, “Whistle-blower fired from Hanford nuclear site,” Associated Press, February 18, 2014; <http://www.komonews.com/news/local/Whistleblower-fired-by-Hanford-contractor-246022351.html?mobile=y>.

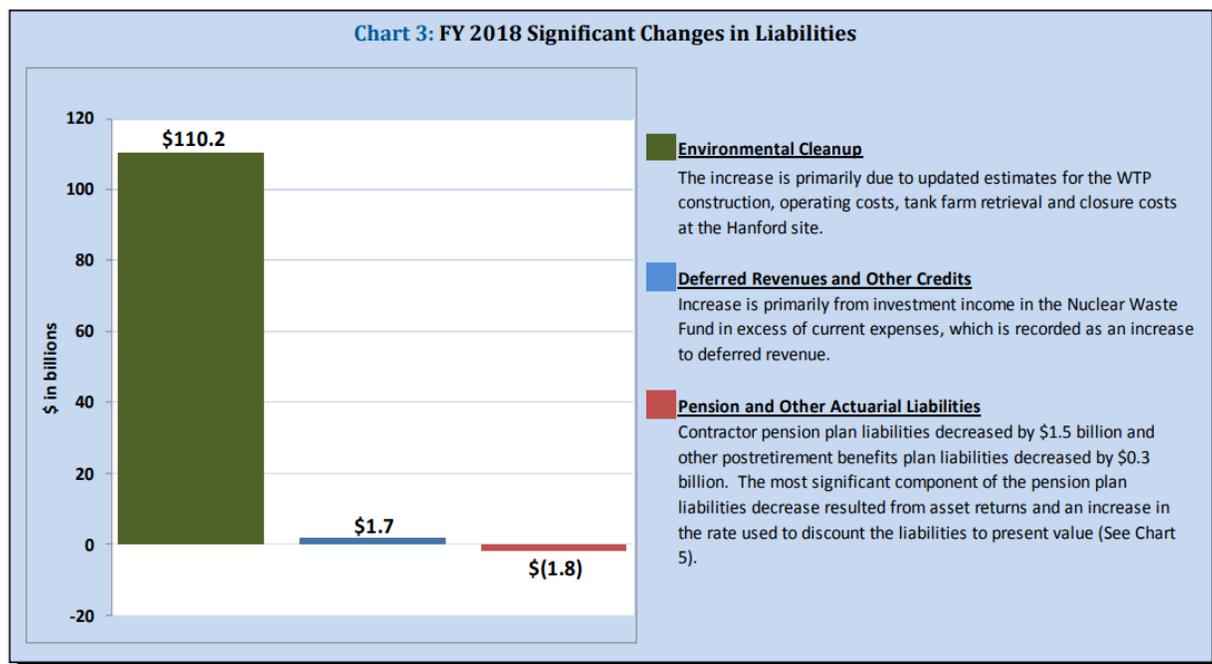
<sup>77</sup> “Special Report: Compilation of Challenges and Previously Reported Key Findings at the Hanford Site for Fiscal Years 2012-2018,” Department of Energy Office of Inspector General, November 2, 2018; <https://www.energy.gov/sites/prod/files/2018/11/f57/DOE-OIG-19-04.pdf>.

<sup>78</sup> Nicholas K. Geranios, “Whistle-blower fired from Hanford nuclear site,” Associated Press, February 18, 2014; <http://www.komonews.com/news/local/Whistleblower-fired-by-Hanford-contractor-246022351.html?mobile=y>.

<sup>79</sup> “OSHA orders Hanford nuclear facility contractor to reinstate worker fired for raising environmental safety concerns,” U.S. Department of Labor Occupational Safety & Health Administration, August 20, 2014; [https://www.osha.gov/pls/oshaweb/owadisp.show\\_document?p\\_table=NEWS\\_RELEASES&p\\_id=26571](https://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=NEWS_RELEASES&p_id=26571).

<sup>80</sup> Agency Financial Report Fiscal Year 2018, U.S. Department of Energy, December 2018; <https://www.energy.gov/sites/prod/files/2018/12/f58/fy-2018-doe-agency-financial-report.pdf>.

**MANAGEMENT’S ANALYSIS, ASSURANCES AND PRIORITIES**



<sup>81</sup> Agency Financial Report Fiscal Year 2018, U.S. Department of Energy, December 2018; <https://www.energy.gov/sites/prod/files/2018/12/f58/fy-2018-doe-agency-financial-report.pdf>.

**CONSOLIDATED AND COMBINED FINANCIAL STATEMENTS**

**Principal Statements**

**U.S. Department of Energy Consolidated Balance Sheets**

As of September 30, 2018 and 2017

(\$ IN MILLIONS)	FY 2018	FY 2017
Environmental Cleanup and Disposal Liabilities <sup>(Note 15)</sup>	493,960	383,784

<sup>82</sup> Laura Strickler, “Cost to taxpayers to clean up nuclear waste jumps \$100 billion in a year,” NBC News, Jan. 29, 2019; <https://www.nbcnews.com/news/all/cost-taxpayers-clean-nuclear-waste-jumps-100-billion-year-n963586>.

<sup>83</sup> “HANFORD WASTE TREATMENT: DOE Needs to Evaluate Alternatives to Recently Proposed Projects and Address Technical and Management Challenges,” Government Accountability Office, May 2015; <http://www.gao.gov/assets/680/670080.pdf>.

<sup>84</sup> “HANFORD WASTE TREATMENT: DOE Needs to Evaluate Alternatives to Recently Proposed Projects and Address Technical and Management Challenges,” Government Accountability Office, May 2015; <http://www.gao.gov/assets/680/670080.pdf>.

<sup>85</sup> Robert Alvarez, “CBO Cost Estimation of Nuclear Modernization Omits Hazardous Cleanup,” The Washington Spectator, December 20, 2017; <https://washingtonspectator.org/alvarez-nuclear-cleanup/>.

<sup>86</sup> Robert Alvarez, “CBO Cost Estimation of Nuclear Modernization Omits Hazardous Cleanup,” The Washington Spectator, December 20, 2017; <https://washingtonspectator.org/alvarez-nuclear-cleanup/>.

<sup>87</sup> “NASA’s Management of the Space Launch System Stages Contract,” National Aeronautics and Space Administration Office of Inspector General, October 10, 2018; <https://oig.nasa.gov/docs/IG-19-001.pdf>.

<sup>88</sup> “NASA’s Management of the Space Launch System Stages Contract,” National Aeronautics and Space Administration Office of Inspector General, October 10, 2018; <https://oig.nasa.gov/docs/IG-19-001.pdf>.

<sup>89</sup> “NASA’s Management of the Space Launch System Stages Contract,” National Aeronautics and Space Administration Office of Inspector General, October 10, 2018; <https://oig.nasa.gov/docs/IG-19-001.pdf>.

<sup>90</sup> “NASA’s Management of the Space Launch System Stages Contract,” National Aeronautics and Space Administration Office of Inspector General, October 10, 2018; <https://oig.nasa.gov/docs/IG-19-001.pdf>.

<sup>91</sup> “NASA’s Management of the Space Launch System Stages Contract,” National Aeronautics and Space Administration Office of Inspector General, October 10, 2018; <https://oig.nasa.gov/docs/IG-19-001.pdf>.

<sup>92</sup> “NASA’s Management of the Space Launch System Stages Contract,” National Aeronautics and Space Administration Office of Inspector General, October 10, 2018; <https://oig.nasa.gov/docs/IG-19-001.pdf>.

<sup>93</sup> “NASA’s Management of the Space Launch System Stages Contract,” National Aeronautics and Space Administration Office of Inspector General, October 10, 2018; <https://oig.nasa.gov/docs/IG-19-001.pdf>.

<sup>94</sup> “NASA’s Management of the Space Launch System Stages Contract,” National Aeronautics and Space Administration Office of Inspector General, October 10, 2018; <https://oig.nasa.gov/docs/IG-19-001.pdf>.

<sup>95</sup> “NASA’s Management of the Space Launch System Stages Contract,” National Aeronautics and Space Administration Office of Inspector General, October 10, 2018; <https://oig.nasa.gov/docs/IG-19-001.pdf>.

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- <sup>96</sup> “NASA’s Management of the Space Launch System Stages Contract,” National Aeronautics and Space Administration Office of Inspector General, October 10, 2018; <https://oig.nasa.gov/docs/IG-19-001.pdf>.
- <sup>97</sup> “NASA’s Management of the Space Launch System Stages Contract,” National Aeronautics and Space Administration Office of Inspector General, October 10, 2018; <https://oig.nasa.gov/docs/IG-19-001.pdf>.
- <sup>98</sup> “NASA’s Management of the Space Launch System Stages Contract,” National Aeronautics and Space Administration Office of Inspector General, October 10, 2018; <https://oig.nasa.gov/docs/IG-19-001.pdf>.
- <sup>99</sup> “NASA’s Management of the Space Launch System Stages Contract,” National Aeronautics and Space Administration Office of Inspector General, October 10, 2018; <https://oig.nasa.gov/docs/IG-19-001.pdf>.
- <sup>100</sup> “NASA’s Management of the Space Launch System Stages Contract,” National Aeronautics and Space Administration Office of Inspector General, October 10, 2018; <https://oig.nasa.gov/docs/IG-19-001.pdf>.
- <sup>101</sup> “NASA’s Management of the Space Launch System Stages Contract,” National Aeronautics and Space Administration Office of Inspector General, October 10, 2018; <https://oig.nasa.gov/docs/IG-19-001.pdf>.
- <sup>102</sup> “NASA’s Management of the Space Launch System Stages Contract,” National Aeronautics and Space Administration Office of Inspector General, October 10, 2018; <https://oig.nasa.gov/docs/IG-19-001.pdf>.
- <sup>103</sup> “NASA’s Management of the Space Launch System Stages Contract,” National Aeronautics and Space Administration Office of Inspector General, October 10, 2018; <https://oig.nasa.gov/docs/IG-19-001.pdf>.
- <sup>104</sup> “NASA’s Management of the Space Launch System Stages Contract,” National Aeronautics and Space Administration Office of Inspector General, October 10, 2018; <https://oig.nasa.gov/docs/IG-19-001.pdf>.
- <sup>105</sup> Eric Berger, “NASA is trying to make the Space Launch System rocket more affordable,” Ars Technica, December 15, 2017; <https://arstechnica.com/science/2017/12/nasa-is-trying-to-make-the-space-launch-system-rocket-more-affordable/>.
- <sup>106</sup> “President Barack Obama on Space Exploration in the 21st Century,” remarks by the President on space exploration in the 21st century at the John F. Kennedy Space Center, Florida, April 15, 2010; [https://www.nasa.gov/news/media/trans/obama\\_ksc\\_trans.html](https://www.nasa.gov/news/media/trans/obama_ksc_trans.html).
- <sup>107</sup> “Seeking a human spaceflight program worthy of a great nation,” Review of United States Human Spaceflight Plans Committee, January 2010; [https://www.researchgate.net/publication/290979455\\_Seeking\\_a\\_human\\_spaceflight\\_program\\_worthy\\_of\\_a\\_great\\_nation](https://www.researchgate.net/publication/290979455_Seeking_a_human_spaceflight_program_worthy_of_a_great_nation).
- <sup>108</sup> Christian Davenport, “The program to build NASA’s moon rocket could double in price to \$9 billion, IG says,” The Washington Post, October 10, 2018; [https://www.washingtonpost.com/technology/2018/10/10/program-build-nasas-moon-rocket-could-double-price-billion-ig-says/?utm\\_term=.ba173e5107c3](https://www.washingtonpost.com/technology/2018/10/10/program-build-nasas-moon-rocket-could-double-price-billion-ig-says/?utm_term=.ba173e5107c3).