

Appendix W

Energy Technical Memorandum

- Final EIS Addendum W, Energy Technical Memorandum, July 2022



Chicago Red Line Extension Project

Energy

Final EIS Addendum W

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Abbreviations

API	area of potential impact
BTU	British thermal unit
CHA	Chicago Housing Authority
CMA	Chicago Metropolitan Agency for Planning
CN/MED	Canadian National/Metra Electric District
ComED	Commonwealth Edison Company
Conrail	Consolidated Rail Corporation
CTA	Chicago Transit Authority
EA	Environmental Assessment
EIS	Environmental Impact Statement
FTA	Federal Transit Administration
GHGs	greenhouse gases
IHB	Indiana Harbor Belt Railroad
NS	Norfolk Southern
RLE	Red Line Extension
RTP	Regional Transportation Plan
TIP	Transportation Improvement Program
UPRR	Union Pacific Railroad
VMT	vehicle miles traveled

Section 1 - Summary

This Energy Addendum updates the analyses of energy consumption under the No Build Alternative and the Preferred Alignment of the Union Pacific Railroad (UPRR) Rail Alternative. The Energy Addendum also compares the energy impacts and benefits under the Preferred Alignment to the East and West Options of the UPRR Rail Alternative in the Draft Environmental Impact Statement (EIS). For the Preferred Alignment, this Energy Addendum considers long-term energy consumption from operation of Red Line Extension (RLE) trains and passenger stations and from project-related vehicles. Short-term energy use includes production of materials used in construction and the operation of construction equipment. The energy sources for operation of the RLE Project would primarily be electricity for Red Line trains and passenger stations, and gasoline and diesel fuel for project-related vehicles.

The energy impacts under the Preferred Alignment are summarized in **Table 1-1** below. Consistent with the findings of the Draft EIS and **Appendix W**, there would be no adverse impacts on energy as a result of either the No Build Alternative or the Preferred Alignment.

Table 1-1: Energy Impact Summary

Alternative	Permanent Impacts		Construction Impacts
	Regional Vehicles	RLE Trains and Station	
No Build Alternative	No Impacts	No impacts	No impacts
Preferred Alignment	Beneficial, from passenger diversions to the Red Line	No adverse impacts	No adverse impacts

The Draft EIS evaluated the long-term energy consumption from Red Line train propulsion and operation of four new stations. With the relocation of the 130th Street station, the Preferred Alignment length increased from 5.3 to 5.6 miles. Extrapolating for the additional 0.3 miles of tracks to the relocated 130th Street station, energy consumption for train propulsion under the Preferred Alignment would be approximately 6 percent higher than the East and West Options. Energy

consumption at the four new stations under the Preferred Alignment would be the same as the East and West Options. The long-term energy consumption for the operation of Red Line trains and four new stations under the Preferred Alignment would increase compared with the No Build Alternative.

The Draft EIS also evaluated the long-term energy consumption from project-related vehicles based on regional vehicle miles traveled (VMT). VMT are the total number of miles driven by all vehicles in the area of potential impact (API) and would slightly decrease under the RLE Project because of the diversion of passengers to the Red Line. The Draft EIS determined that the East and West Options would result in lower vehicular energy consumption as compared with the No Build Alternative. The energy consumption from regional VMTs under the Preferred Alignment would be the same as those evaluated for the East and West Options. The Preferred Alignment would reduce VMTs; and therefore it would slightly lower energy consumption from vehicles as compared with the No Build Alternative.

The Draft EIS determined the total long-term energy impacts for the RLE Project by adding the energy consumption from operation of Red Line trains and stations, and then subtracting the energy benefit from reduced VMTs resulting from passenger diversions to the Red Line. The East and West Options would require slightly more long-term energy than the No Build Alternative. The energy needed for operations would be far lower than the existing surplus generating capacity for the region. The additional demand for the RLE Project would be less than 0.02 percent of the surplus generating capacity in the regional transmission territory. The Draft EIS concluded that the operation of the UPRR Rail Alternative would not have an adverse impact on regional energy sources.

Under the Preferred Alignment, long-term energy consumption would be similar to the East and West Options. The Preferred Alignment would require slightly more long-term energy use to operate Red Line trains, because the Preferred Alignment length would increase from 5.3 to 5.6 miles to the relocated 130th Street station. The additional energy demand for operation of the Preferred Alignment would be well below the available energy supply, and therefore the Preferred Alignment would not have an adverse impact on regional energy sources.

Construction of the RLE Project would use energy for the production of the guideway and station components (including steel, cement, copper, and glass), and for the operation of construction equipment. Because construction energy use would be a small fraction of energy use in the region, the Draft EIS determined that construction of the RLE Project would not have an adverse impact

on regional energy consumption and no construction mitigation was required. Under the Preferred Alignment, short-term construction energy consumption would be similar as the East and West Options discussed in the Draft EIS. No adverse energy impacts during construction would be anticipated under the Preferred Alignment, and no additional construction mitigation would be required.

Section 2 - Project Description and Background

The Chicago Transit Authority (CTA), as project sponsor to the FTA, proposes to extend the existing Red Line heavy rail transit service 5.6 miles south from the existing 95th/Dan Ryan terminal to Chicago's Far South Side. This project is one part of the Red Ahead Program to extend and enhance the entire Red Line. The Red Line provides rapid transit services 24/7 and is the most heavily traveled rail line in the CTA System.

The RLE Project would reduce commute times for residents, improve mobility and accessibility, and provide connection to other transportation modes. The RLE Project could also foster economic development, where new stations may serve as catalysts for neighborhood revitalization and help reverse decades of disinvestment in local business districts. The RLE Project would also provide a modern, efficient railcar storage yard and shop facility.

CTA undertook an extensive Alternatives Analysis process from 2006 to 2009 that considered multiple modes and corridor options for the RLE Project. The Chicago Transit Board designated the UPRR Rail Alternative as the Locally Preferred Alternative on August 12, 2009. Based on further technical analysis and public input, CTA selected the UPRR Rail Alternative as the NEPA Preferred Alternative in August 2014. The Draft EIS, published on October 6, 2016, disclosed the environmental benefits and impacts of the No Build Alternative and the two UPRR Rail Alternative options: the East Option and the West Option shown in **Figure 2-1**.

Subsequent to the publication of the Draft EIS, continued design and outreach by CTA resulted in the selection of the Preferred Alignment for the RLE Project. The Preferred Alignment was announced to the public on January 26, 2018. The Preferred Alignment is a hybrid of the East and West Options of the UPRR Rail Alternative presented in the Draft EIS. CTA reviewed multiple locations for a cross-over area that would maximize the benefits and reduce the impacts of the East and West Options.

The UPRR provided comments on the Draft EIS where they expressed their preference for the West Option due to concerns for the proximity of the East Option to their tracks. UPRR noted that the location of the Roseland Pumping Station could not accommodate UPRR's requested clearance of 25 feet between the centerlines of the UPRR's potential tracks and the proposed East Option. Therefore, all hybrid options considered in selecting the Preferred Alignment started with the West Option and crossed over from the west to the east side of the UPRR tracks south of the pumping station and north of 115th Street to minimize property impacts. Comparative analysis of parcel impacts and alignment with the goals of the RLE Project identified the vicinity of 108th Place as the cross-over location that would provide the greatest benefit. A cross-over in the vicinity of 108th Place would preserve viable businesses; minimize impacts on schools, residences, and the historic

Roseland Pumping Station; and preserve properties slated for future development surrounding the station areas. However, additional engineering refined the alignment further, which moved the UPRR crossing north from 108th Place to 107th Place. The refinement would lower the 111th Street station platform height and would lower the profile of the elevated structure.

After the announcement of the Preferred Alignment in 2018, CTA continued to conduct stakeholder coordination and further develop design plans. Norfolk Southern Railway (NS) shared their plans for future potential access to Canadian National/Metra Electric District (CN/MED) tracks to the north of Kensington Yard and the national freight rail network at that location. This access would allow restoration of a former connection that the Michigan Central Railroad had with the CN/MED tracks, which were then owned by the Illinois Central Railroad. The 120th Street yard and shop presented in the Draft EIS would have precluded future potential access to those tracks as well as access to All American Recycling located west of the railroad tracks (11900 S. Cottage Grove Avenue). The All American Recycling facility is served by the NS via its joint ownership of Conrail and the Indiana Harbor Belt Railroad (IHB). This coordination with NS resulted in additional adjustments to the Preferred Alignment near the 120th Street yard and shop. The 120th Street yard and shop and the tracks south to 130th Street were shifted approximately 100 feet to the west to accommodate NS railroad access to the All American Recycling and potential improvements to the national freight rail network, namely a future connection from the NS track to CN tracks along the MED corridor. In addition, this design refinement would provide a rail connection to facilitate rail delivery of ballast, ties, and other material to support CTA operations.

In 2019, CTA began exploring an opportunity to relocate the 130th Street station, the terminating station of the RLE Project, to a location south of 130th Street. The Draft EIS had originally proposed the station location north of 130th Street. In 2017, after publication of the Draft EIS, the Chicago Housing Authority (CHA) demolished Blocks 11, 12, and 13 of the Altgeld Gardens neighborhood, creating an opportunity to relocate the station south of 130th Street to the area of the demolished blocks. The demolition of Blocks 11, 12, and 13 of Altgeld Gardens was an activity completed by CHA and was independent and unrelated to the RLE Project. CTA evaluated the station relocation for feasibility. Meetings were held with partner agencies and stakeholder groups of residents in the station area with these agencies and groups expressing support for the station relocation. The design refinement relocated the station from north of 130th Street, as presented in the Draft EIS, to south of 130th Street, adjacent to the Altgeld Gardens neighborhood.

Since the publication of the Draft EIS and selection of the Preferred Alignment, three design refinements were made as discussed above: (1) the location of the 107th Place cross-over between UPRR East and West alignment options evaluated in the Draft EIS required for selection of a hybrid Preferred Alignment; (2) refinement of the 120th Street yard and shop location; and (3) relocation of the 130th Street station to extend the Preferred Alignment farther south so the 130th Street station

would be within the Altgeld Gardens neighborhood. These design refinements were evaluated in a Supplemental Environmental Assessment (EA). The agency coordination and outreach associated with the Supplemental EA have influenced the design refinements incorporated into the Preferred Alignment and that is analyzed in this Final EIS.

Additional details about the Preferred Alignment may be found in **Appendix E**.



Figure 2-1: Left- East and West Options of the UPRR Rail Alternative (Draft EIS), Right- Preferred Alignment (Final EIS)

Section 3 - Methods for Impact Evaluation

Methods presented in **Appendix W** for the Draft EIS analyses have been carried forward to evaluate the potential energy impacts and mitigation. This section documents the methodology for evaluating this resource, consistency with the methodology used in the Draft EIS and **Appendix W**, and any methodological changes.

3.1 Regulatory Framework

There are no changes to the applicable federal or state regulations referenced in **Appendix W** of the Draft EIS.

3.2 Impact Analysis Thresholds

The thresholds for the analyses of energy impacts for this Energy Addendum are the same as the impact analysis thresholds in the Draft EIS and **Appendix W**. The Draft EIS defined an impact to be adverse if it would result in a permanent increase in annual energy or fuel usage that could not be accommodated by the regional (Cook County) supply.

3.3 Area of Potential Impact

The API for this Energy Addendum is consistent with the API used in the Draft EIS and **Appendix W**. The API for the energy analysis in the Draft EIS was on the north by 91st Street, on the south by a varying boundary that includes Jackson Street/134th Street, on the east by a varying boundary that includes Martin Luther King Drive, Michigan Avenue, and I-94, and on the west by a varying boundary that includes Halsted Avenue, Vincennes Avenue, and I-57.

While the RLE Project would occur within the API, both long-term (vehicular and transit operations) and short-term (construction) energy use associated with the project would extend well outside the API. Changes in vehicular energy use would be regional because a portion of travelers would change modes from automobile to transit for trips between the API and downtown Chicago. Energy generation for transit operations would be dispersed over a wide region, and electric power generation for rail transit would take place anywhere within a 13-state region.

3.4 Methods

The analysis of energy impacts of the Preferred Alignment was performed using the same methods as were documented in the Draft EIS consistent with the following analyses of **Appendix W**.

The Draft EIS evaluated the long-term energy consumption from project-related vehicles by comparing the energy consumption based on regional VMTs for the alternatives. Regional VMTs under the Preferred Alignment would be the same as those evaluated for the East and West Options. The 130th Street station relocation, 120th Street yard and shop refinement, and 107th Place cross-over under the Preferred Alignment would not change the VMT from the VMT evaluated in the Draft EIS.

The Draft EIS evaluated the long-term energy consumption during operation of the RLE trains and the four new passenger stations. This Energy Addendum compares the energy required for propulsion of RLE trains under the Preferred Alignment with the energy demand for the UPRR Alternative in the Draft EIS. With the relocation of the 130th Street station, the RLE Project length increased from 5.3 to 5.6 miles. Extrapolating for the additional 0.3 miles of tracks to the relocated 130th Street station, energy consumption for train propulsion under the Preferred Alignment would be approximately 6 percent higher than the East and West Options in the Draft EIS. The energy consumption at the four new stations under the Preferred Alignment would be the same for the East and West Options.

Section 4 - Affected Environment

This section describes any updates to the existing energy conditions near the RLE Project since the publication of the Draft EIS. This section documents updates to the baseline data, as well as any changes to energy planning and policy framework in the communities and jurisdictions affected by the Preferred Alignment.

4.1 Existing Energy Resources

The existing energy resources for this Energy Addendum are the same as the existing energy resources in the Draft EIS and **Appendix W**. CTA receives its power from the Commonwealth Edison Company (ComEd), which is purchased primarily from alternative retail electricity suppliers.

The Draft EIS concluded that ComEd has ample surplus energy for the operation of the RLE Project (as **Appendix W** describes, the additional demand from the RLE Project would be less than 0.02 percent of the surplus generating capacity in the regional transmission territory).

4.2 Planning and Policy Framework

CTA has been implementing measures to improve energy efficiency at rail stations, offices, and maintenance facilities by incorporating sustainable features in new buildings and retrofitting existing buildings to conserve energy. Energy efficiency features at other CTA facilities include more energy-efficient lighting such as LED lighting, solar panels, and green roofs. Green roofs conserve energy, reduce stormwater runoff, and reduce urban heat island effects. Measures to improve energy efficiency also reduce the emissions of greenhouse gases (GHGs) and other air pollutants.

CTA is a partner in the *Chicago Climate Action Plan* (City of Chicago 2008). The City of Chicago has issued the *Chicago Climate Action Plan* to reduce carbon pollution and prepare for a changing climate. Major strategies of the *Chicago Climate Action Plan* include reducing energy use in buildings, investing in transit improvements, and promoting transit-orientated development.

The Draft EIS identified that the RLE Project was included in the Chicago Metropolitan Agency for Planning's (CMAP) *GO TO 2040*, which was the regional transportation plan (RTP) for the Chicago region. Since publication of the Draft EIS, CMAP has adopted *ON TO 2050*, as the RTP for the region (CMAP 2018b). The Preferred Alignment is included in *ON TO 2050*, as it was in *GO TO 2040*. CMAP in 2018 adopted the *FFY 2019-2024 Transportation Improvement Program* (CMAP 2018a), which also includes the RLE Project.

Section 5 - Impacts and Mitigation

Consistent with the Draft EIS, the impacts and mitigation summaries are organized into three impact categories—permanent, construction, and cumulative—with references to energy consumption and resources.

- Permanent impacts relate to system operations after the project has been constructed, as well as land acquisitions necessary for the permanent right-of-way.
- Construction impacts are temporary and are anticipated to occur for the construction phase of the project, up to five years, including construction staging and utility relocations.
- Cumulative impacts are those of the project combined with other past, present, or near future projects within the API.

This section also documents the new or revised mitigation measures for identified project impacts, where applicable. If there is no change in the mitigation, this section indicates where there is no change when compared to the East and West Options evaluated in the Draft EIS. Likewise, this section indicates what additional (or fewer) measures apply to the Preferred Alignment.

5.1 No Build Alternative

The No Build Alternative is defined as the existing transportation system plus any committed transportation improvements that are already in the current CMAP Transportation Improvement Program (TIP). No new infrastructure would be built as part of the RLE Project under the No Build Alternative. The No Build Alternative is a required alternative as part of the NEPA environmental analysis and is used for comparison purposes to assess the relative benefits and impacts of implementing the Preferred Alignment.

As described in **Appendix W** in the Draft EIS, there would be no impacts on energy resources under the No Build Alternative. The No Build Alternative would not result in energy impacts related to construction activities. The No Build Alternative would have no change in Red Line ridership resulting from the RLE Project, and therefore power consumption for Red Line trains and stations would not increase.

The No Build Alternative would not be expected to change the regional VMTs from diversion of motor vehicles to trains. However, some growth in VMT for the project corridor that would be unrelated to the project would still take place. The increases in regional VMT would lead to increases in energy consumption by vehicles under the No Build Alternative. The Draft EIS

calculated the energy consumption from the total regional VMT under the No Build Alternative to serve as a baseline for comparison to the RLE Project.

Regional VMTs under the No Build Alternative would be the same as those evaluated in the Draft EIS. Energy impacts under the No Build Alternative would not be adverse, and no mitigation is required.

5.2 Union Pacific Railroad Alternative - Preferred Alignment

The energy analysis examines two components of energy demand: long-term energy consumption and short-term energy consumption. Long-term energy consumption is ongoing energy use that continues year after year. The analyses of long-term energy consumption included regional transportation-related energy consumption based on VMT and on transit operations. Transit operations include energy for propulsion of RLE trains and operation of RLE stations and other CTA facilities. Short-term energy use includes production of materials used in construction and the operation of construction equipment.

The Preferred Alignment would be consistent with the *Chicago Climate Action Plan* (City of Chicago 2008). Major strategies of the *Chicago Climate Action Plan* are to reduce energy use in buildings, invest in transit improvements, and promote transit-orientated development.

5.2.1 Permanent Impacts and Mitigation - Preferred Alignment

5.2.1.1 Regional Vehicular Energy Consumption

The Draft EIS evaluated the long-term energy consumption from project-related vehicles. Changes in vehicular use under the RLE Project would be regional because a portion of travelers would change modes from automobile to transit for trips between the API and downtown Chicago. Energy consumption from motor vehicles under the RLE Project is based on regional VMT. The annual VMT are the total number of miles driven by all vehicles within a year in the API. The RLE Project would cause a small decrease in annual VMT compared with the No Build Alternative due to vehicular trip distance changes (people would be nearer to transit stations) and mode changes (people would change their travel mode from personal vehicles to transit). Energy consumption by vehicles is primarily in the form of gasoline and diesel fuel.

The Draft EIS determined that the East and West Options would result in lower regional VMT than the No Build Alternative as a result of passenger diversions to the Red Line. Because it would reduce VMTs, the UPRR Alternative would result in lower vehicular energy consumption as compared with

the No Build Alternative (**Appendix W**). The energy consumption from vehicles would be the same for the East and West Options.

Regional VMTs under the Preferred Alignment would be the same as those evaluated for the East and West Options in the Draft EIS. The 130th Street station relocation, 120th Street yard and shop refinement, and 107th Place cross-over under the Preferred Alignment would not change the VMT from the VMT discussed in the Draft EIS. Because regional VMT would be the same, the energy consumption for motor vehicles under the Preferred Alignment would be the same as those evaluated for the East and West Options in the Draft EIS. The Preferred Alignment would reduce VMTs, and therefore it would slightly lower energy consumption from vehicles as compared with the No Build Alternative.

5.2.1.2 Red Line Passenger Stations

The RLE Project would include four new stations at 103rd Street, 111th Street, Michigan Avenue, and 130th Street. The Draft EIS evaluated the long-term energy consumption during operation of the new passenger stations. Station energy was calculated based on similar CTA Red Line elevated stations. The Draft EIS calculated that the four stations associated with the UPRR Alternative would use approximately 6.8 billion British thermal units (BTU) annually, which would be an increase over the No Build Alternative (**Appendix W**). The energy consumption at the stations would be the same for the East and West Options. The primary source of energy for the stations would be electricity.

Under the Preferred Alignment, the 130th Street station relocation would not change the energy consumption at stations as discussed in the Draft EIS. Energy consumption at the four new stations under the Preferred Alignment would increase compared with the No Build Alternative.

The RLE Project also would include a new maintenance yard and shop and six new and upgraded substations. Substations are buildings along the alignment that house equipment to regulate the flow of electricity to the third rail, which supplies power to the trains. Long-term energy consumption at the new substations and yard under the Preferred Alignment would be the same as under the East and West Options. The 120th Street yard and shop refinement under the Preferred Alignment would not change long-term energy consumption.

5.2.1.3 Red Line Train Propulsion

The primary source of energy for operation of the RLE trains would be electricity. The Draft EIS evaluated the long-term energy consumption from train propulsion. For the rail alternatives, operational energy consumption was calculated from the total additional annual railcar miles and the average kilowatt-hour per revenue car mile provided by CTA. The Draft EIS calculated that operation of the RLE trains under the UPRR Alternative would use approximately 128 billion BTU annually, which would be an increase over the No Build Alternative (**Appendix W**). The energy consumption by RLE trains would be the same for the East and West Options.

The Preferred Alignment would result in similar long-term energy consumption for the operation of RLE trains. With the relocation of the 130th Street station, the RLE Project length would increase from 5.3 to 5.6 miles. Extrapolating for the additional 0.3 miles of tracks to the relocated 130th Street station, energy consumption for train propulsion under the Preferred Alignment would be approximately 6 percent higher than the East and West Options in the Draft EIS. Similar to the UPRR Alternative, energy consumption for RLE trains under the Preferred Alignment would increase compared with the No Build Alternative.

5.2.1.4 RLE Project Energy Consumption

The Draft EIS determined the total long-term energy impacts for the RLE Project by adding the energy consumption from operation of RLE trains and stations and then subtracting the energy benefit from reduced VMT. The total long-term energy consumption for the UPRR Alternative was then compared with the available energy supply. The Draft EIS defined an adverse impact as a permanent increase in annual energy or fuel usage consumption that could not be accommodated by the regional (Cook County) energy supply.

The Draft EIS determined that the UPRR Alternative would require slightly more long-term energy than the No Build Alternative. The energy needed for operation would be far less than the existing surplus generating capacity for the region. The additional demand from the UPRR Alternative would be less than 0.02 percent of the surplus generating capacity in the regional transmission territory (**Appendix W**). The Draft EIS concluded that the operation of the UPRR Alternative would not have an adverse impact on regional energy sources.

Under the Preferred Alignment, long-term energy consumption would be similar to the East and West Options of the UPRR Alternative. The Preferred Alignment would require slightly more long-term energy use to operate RLE trains, because the RLE Project length would increase from 5.3 to 5.6 miles, due to the relocation of the 130th Street station. The additional energy demand for

operation of the Preferred Alignment would be well below the available energy supply, and therefore, the Preferred Alignment would not have an adverse impact on regional energy sources.

5.2.2 Construction Impacts and Mitigation - Preferred Alignment

Energy would be required for construction of the RLE Project. Energy would be used for the production of the guideway and station components (including steel, cement, copper, and glass). Energy also would be used for the operation of construction equipment. Construction impacts would be temporary and would be spread out over the 1 year of construction staging and utility relocations and the 3- to 4-year construction phase of the RLE Project.

The one-time irreversible commitment of energy resources for construction of the UPRR Alternative would amount to less than 1.2 percent of the total annual of Cook County energy consumption (**Appendix W**). Because construction energy use would be a small fraction of energy use in the region, the Draft EIS determined that construction of the RLE Project would not have an impact on energy consumption in Cook County or the Chicago Metropolitan area. Construction energy impacts would not be adverse under the UPRR Alternative, and no mitigation during construction would be required.

Under the Preferred Alignment, short-term construction energy consumption would be similar to the East and West Options discussed in the Draft EIS. No adverse energy impacts during construction would be anticipated under the Preferred Alignment, and no construction mitigation would be required.

5.2.3 Cumulative Impacts and Mitigation - Preferred Alignment

Cumulative impacts include those from the RLE Project when combined with those of other past, present, and reasonably foreseeable projects. The cumulative energy impacts under the Preferred Alignment are the same as the UPRR Alternative as described in **Appendix W** of the Draft EIS.

The RLE Project, when combined with the existing Red Line train operations and other future CTA transit projects, would increase transit ridership and reduce vehicle trips. The cumulative impacts of reduced vehicle trips would result in a reduction of energy demand from vehicles and would be a beneficial impact.

Section 6 - Impacts Remaining after Mitigation

This section describes the permanent impacts of the RLE Project remaining after mitigating for impacts as described in **Section 5**.

6.1 No Build Alternative

Consistent with the findings of the Draft EIS, there would be no adverse impacts on energy as a result of the No Build Alternative.

6.2 Union Pacific Railroad Alternative - Preferred Alignment

Consistent with the findings of the Draft EIS, there would be no adverse impacts on regional energy resources during construction and operation of the Preferred Alignment.

Section 7 - References Cited

Chicago Metropolitan Agency for Planning (CMAP), 2018a. FFY 2019-2024 Transportation Improvement Program. Accessed at <https://www.cmap.illinois.gov/programs/tip/tip-documentation>. Accessed on July 30, 2021.

Chicago Metropolitan Agency for Planning (CMAP), 2018b. ON TO 2050. Accessed at <https://www.cmap.illinois.gov/2050/>. Accessed on July 22, 2021.

Chicago Transit Authority (CTA), 2016. Chicago Red Line Extension Draft Environmental Impact Statement and Section 4(f) Evaluation. Accessed at <https://www.transitchicago.com/rle/drafteis/>. Accessed on January 21, 2021.

City of Chicago, 2008. Chicago Climate Action Plan. Accessed at <https://www.chicago.gov/city/en/progs/env/climateaction.html>. Accessed on July 28, 2021.