

**BEFORE THE STATE OF NEW YORK  
PUBLIC SERVICE COMMISSION**

**Petition of Consolidated Edison Company of  
New York, Inc. for Authorization and Cost  
Recovery for the Reliable Clean City – Idlewild  
Project**

**CASE 22-E-0064**

**PETITION OF CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.  
FOR AUTHORIZATION AND COST RECOVERY  
FOR THE RELIABLE CLEAN CITY – IDLEWILD PROJECT**

CONSOLIDATED EDISON  
COMPANY OF NEW YORK, INC.

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New York, New York  
August 22, 2023

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**I. INTRODUCTION**

The Jamaica Network is Con Edison’s electrically largest network and serves critical customers like JFK International Airport, the Long Island Railroad transit hub at the Jamaica Station, and several Metropolitan Transportation Authority bus depots. Con Edison forecasts that by 2026 load growth due to electrification and other factors will cause peak customer demand to exceed the peak design capability of the Jamaica Distribution Area Substation. The Company expects the exceedance to grow in later years.

To address the forecasted exceedance, Con Edison plans to split the Jamaica Network into two separate networks, a smaller Jamaica Network and the new Springfield Network, build the new Eastern Queens Transmission Substation and Idlewild Distribution Area Substation to supply the Springfield Network, and transfer 170 MW of load from the Jamaica Network

Distribution Area Substation to the Idlewild Distribution Area Substation (the “Reliable Clean City – Idlewild Project” or the “Project”).<sup>1</sup>

The Commission should authorize Con Edison to build and recover the costs of the Reliable Clean City – Idlewild Project.<sup>2</sup> First, the Project is needed to maintain reliability for current Jamaica Network customers. Second, alternatives would not address the reliability need. The peak design exceedance cannot be met through equipment updates or a transfer of load to any adjoining distribution area substation, and Non-Wires Solutions and energy efficiency measures would be insufficient to provide a permanent solution. Third, the Project has additional benefits. For example, the Project will facilitate future electrification by enabling 170 MW of future growth in the Jamaica Network and 176 MW of future growth in the new Springfield Network.<sup>3</sup> The Project will also create new points of interconnection for energy storage and future clean energy projects and mitigate reliability concerns expected to arise in 2039 and 2040 in the Corona Distribution Area Substations in the Rego Park and Flushing Networks.

Con Edison currently estimates that the Project’s capital cost will be approximately \$1.2 billion. The Company requests authority to recover these costs so that it can begin this project

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<sup>1</sup> To aid the Commission’s review of this project, the Company has included its whitepaper as Exhibit A. The whitepaper includes the construction schedule, cost estimates, justification, alternatives, and other project-specific information.

<sup>2</sup> Con Edison’s electric rate plan authorizes the Company to petition the Commission for authorization and cost recovery for this reliability project no earlier than thirty days after Commission approval of the rate plan. Case 22-E-0064, *Proceeding on Motion of the Commission as to the Rates, Charges, Rules and Regulations of Consolidated Edison Company of New York, Inc. for Electric Service*, Order Adopting Terms of Joint Proposal and Establishing Electric and Gas Rate Plans with Additional Requirements at 90 (July 20, 2023). The project was not covered by the rate plan because of timing considerations. *Id.* at 43 (explaining that “[g]iven the magnitude of [this reliability] project, and because the Company proposed the project late in the review process of [the recent] rate proceedings, DPS Staff was unable to thoroughly evaluate the needs and budget for the proposed project.”).

<sup>3</sup> Existing capacity on the transmission system will allow for approximately 160 MW of future growth. To enable the 170 MW of future growth in the new Jamaica Network and 176 MW of future growth in the new Springfield Network (346 MW total), additional transmission expansion is required.

now. It specifically requests recovery through a surcharge if the Project is put into service prior to inclusion in a Company rate plan and/or recovery through base rates in a subsequent rate filing.

The Company must move on an aggressive schedule to build the Project in time. Accordingly, it plans to issue requests for proposals for preliminary engineering in October 2023 and anticipates signing contracts by the end of 2023. In addition, some equipment for the Project currently has significant lead times for procurement, including transformers, gas-insulated switchgear, circuit switchers, capacitor banks, transmission cables and other associated equipment. Therefore, Con Edison requests that the Commission act on this petition by its November 16, 2023 meeting.

## **II. BACKGROUND**

### **1. Jamaica Network**

Con Edison delivers electricity to customers through transmission and distribution facilities. In general, a transmission substation supplies power to one or more distribution area substations, which in turn feed local electric networks that supply power to customers.

The Jamaica Network is Con Edison's highest peak demand network, forecasted at 464 MW for summer 2023. It is also one of the largest geographically, and one of the most isolated, being generally further away from other Company transmission and distribution area substations. The Network serves over 162,000 customers, including JFK International Airport, which is the country's sixth busiest airport with about 26.9 million passengers annually,<sup>4</sup> the Long Island

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<sup>4</sup>"Statistics for JFK Airport." *JFK Airport*, [www.jfkairport.net/statistics](http://www.jfkairport.net/statistics). Accessed 19 August 2023.

Railroad Jamaica Station, which is the country’s third busiest train station,<sup>5</sup> and four major MTA bus depots with approximately 700 buses that the MTA is planning to switch to electric battery powered vehicles.

## **2. Load Forecast and Need for Load Relief**

Con Edison’s November 2022 load forecast,<sup>6</sup> combined with distribution area station planning design criteria, shows that the peak demand at design conditions for the Jamaica Distribution Area Substation is projected to exceed its design capability of 492 MW as early as 2026 (*see below*). Further, the summer peak customer demand, which is weather normalized to a design Temperature Variable of 86,<sup>7</sup> will exceed the substation’s design capability limit by 6 MW in 2026, 8 MW in 2027, and 9 MW in 2028. The exceedance is driven by a significant increase in the electric demand due to vehicle electrification and economic growth. In particular, the forecast includes electrification related to medium and heavy-duty vehicles, such as the buses, cargo vans, and trucks associated with the logistic and shipping operations prevalent in the Jamaica Network, and the \$14 billion redevelopment program at John F. Kennedy Airport (“JFK”).<sup>8</sup>

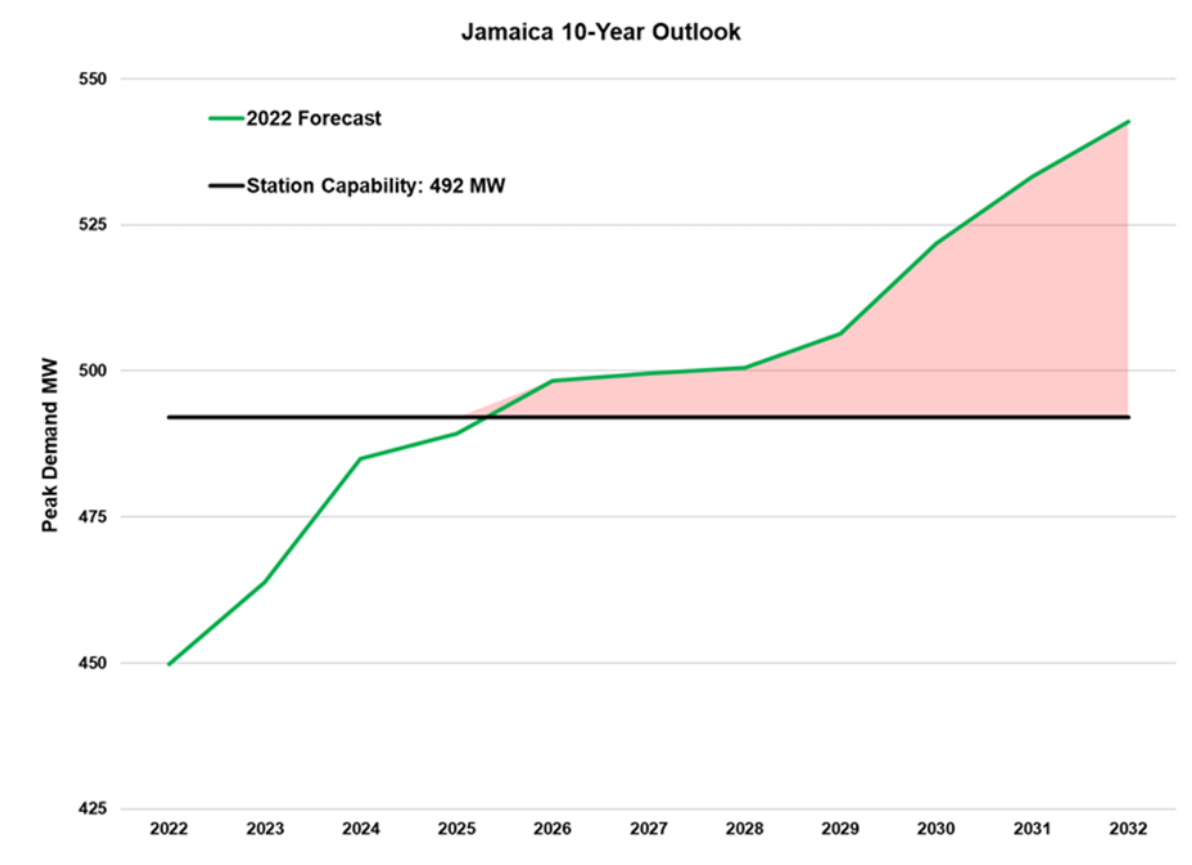
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<sup>5</sup> “Busiest Train Stations in the United States.” *WorldAtlas*, 10 Jun. 2019, [www.worldatlas.com/articles/busiest-train-stations-in-the-united-states](http://www.worldatlas.com/articles/busiest-train-stations-in-the-united-states).

<sup>6</sup> Peak demand forecasts are 10-year outlooks of the net customer demand growth of specific electric demand areas. The forecasts consider the factors that affect summer peak hour demand at design weather criteria for each individual electric demand area.

<sup>7</sup> The Company evaluates electric system peak demand based on a Temperature Variable (TV). The summer period TV is similar to a ramping heat index that considers heat and humidity over several days. Based on the Company’s December 2019 Climate Change Vulnerability Study, TV is projected to increase one TV unit per decade. Beginning in the 2030, TV will increase from 86 to 87 degrees.

<sup>8</sup> The JFK redevelopment project involves the demolition and reconstruction of all terminals at JFK (on a rolling basis), the electrification of all facilities at JFK, and upgrades to the airport’s electric transformers. According to the load letters submitted by JFK personnel, the Port Authority could approximately double its electric peak demand needs by 2032.

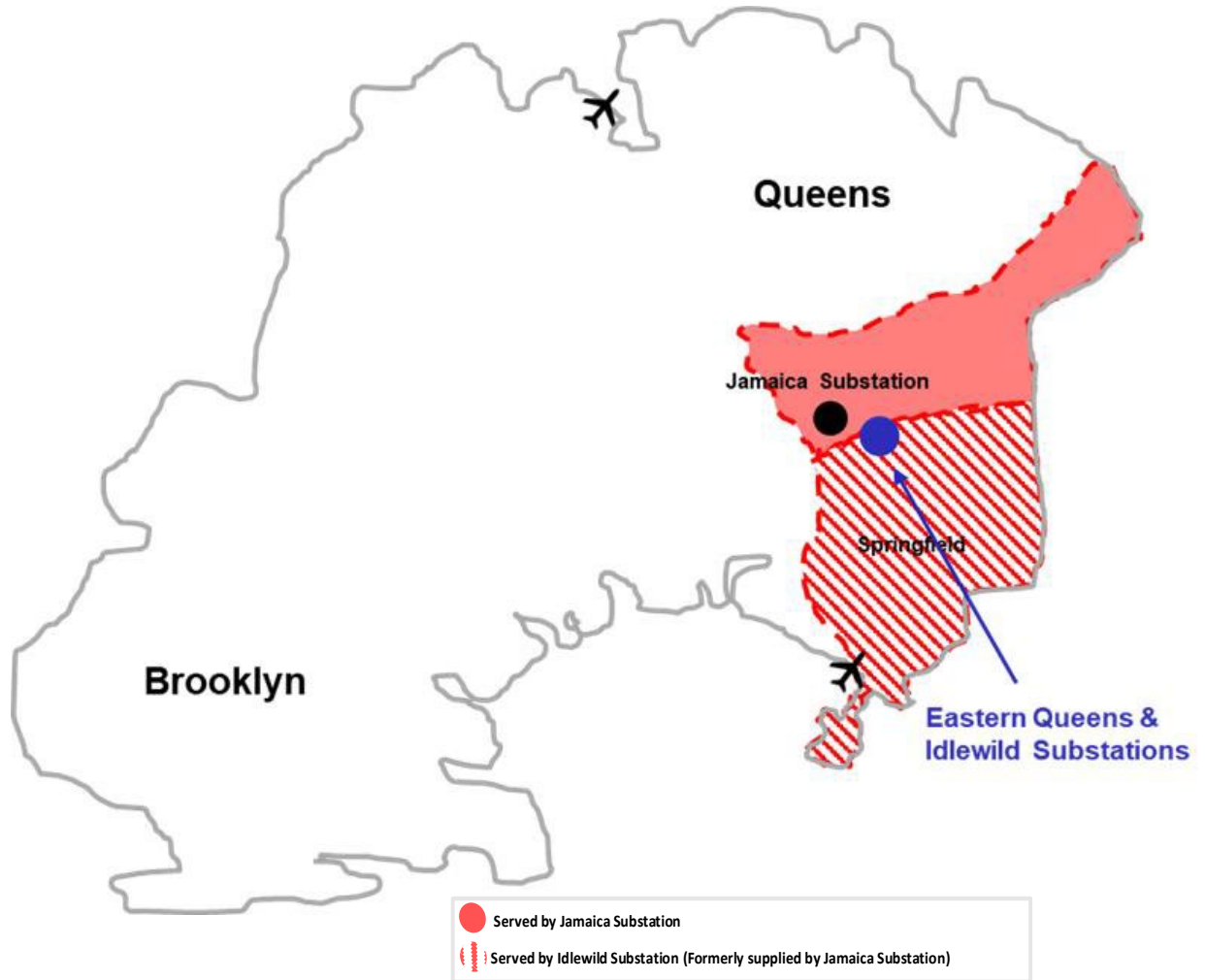


### III. RELIABLE CLEAN CITY – IDLEWILD PROJECT

To address the forecasted exceedance, Con Edison plans to split the Jamaica Network into two separate networks, a smaller Jamaica Network and the new Springfield Network, build the new Eastern Queens Transmission Substation and Idlewild Distribution Area Substation to supply the Springfield Network, and transfer 170 MW of load from the Jamaica Distribution Area Substation to the Idlewild Distribution Area Substation.<sup>9</sup> The new Eastern Queens Transmission Substation and Idlewild Distribution Area Substation will be on a vacant Company-owned parcel in Jamaica, Queens.

<sup>9</sup> The reconfigured Jamaica Network will continue to receive and distribute electric supply through the existing Jamaica Transmission Substation and the existing Jamaica Distribution Area Substation.

Con Edison forecasts the total capital cost of the Project to be approximately \$1.2 billion broken downs as follows: approximately \$592 million for the Eastern Queens Transmission Substation; approximately \$380 million for the Idlewild Distribution Area Substation; and approximately \$242 million for electric facilities, *e.g.*, feeders, for the new Springfield Network. Con Edison plans to complete the Project by May 2028.



### A. Eastern Queens Transmission Substation

The new Eastern Queens Transmission Substation will be an indoor, 138kV, gas insulated switchgear substation arranged in a double ring bus configuration with provisions for future points of interconnection, which may include energy storage. It will include circuit

breakers and four 138kV connections, expandable to five, to supply the new Idlewild Distribution Area Substation. To connect it to Con Edison's transmission system, the Company will intercept and re-route existing feeders 903 and 901 L and M.<sup>10</sup> in-service date for the Eastern Queens Transmission Substation is April 2028.

### **B. Idlewild Distribution Area Substation**

The new Idlewild Distribution Area Substation will be an indoor, 27 kV substation arranged in a double synchronous bus configuration. It will include four 93 MVA, 138 kV/27 kV transformers, with provisions for an additional transformer in the future. The substation will include fifty feeder positions, including seventeen new 27 kV feeders to supply the new Springfield Network. The in-service date for the Idlewild Distribution Area Substation is May 2028.

### **C. Creation of Springfield Network**

Con Edison will transfer approximately 170 MW from the Jamaica Distribution Area Substation to the Idlewild Distribution Area Substation. The Company will run new 27 kV feeders from the Idlewild Distribution Area Substation to the seventeen existing 4 kV unit substations that comprise the current Jamaica 4kV grid load pocket and that will form the new Springfield Network. The load transfer includes: the Jamaica 4 kV load grid along with the associated Springfield Gardens Autoloop and two small, segregated load pockets of network load inside the larger 4 KV non network consisting of 12 MW of load. The work requires

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<sup>10</sup> Con Edison will continue to receive delivery of energy through its contracted wheeling service with LIPA. Feeder 901 L and M (to LIPA's Valley Stream Substation) and Feeder 903 (to LIPA's Lake Success Substation) will now connect to the Eastern Queens 138 kV Transmission Substation while continuing to Jamaica 138 kV Transmission Substation.



approximately 131,000 ft. of new duct, 425 manholes, 680 sections of primary cable, and 17 switches.

**IV. THE COMMISSION SHOULD AUTHORIZE THE RELIABLE CLEAN CITY – IDLEWILD PROJECT**

**1. The Project Is Needed for Reliability and Alternatives Do Not Address this Need**

Based on the Company’s current load forecast, the Project is needed to maintain reliability for current Jamaica Network customers. Without the project, load shedding may be required during peak load conditions beginning in 2028.

As explained in more detail in the Whitepaper, Con Edison evaluated different options for solving the projected exceedance and the Project is the only viable option based on factors such as reliability, feasibility, and cost effectiveness.

**i. Non-Wires Solutions**

Under its reliability criteria, Con Edison addresses forecasted exceedances of a Network’s capability through Non-Wires Solutions or infrastructure additions. The Company is pursuing a portfolio of Non-Wires Solutions designed to reduce peak load in the Jamaica Network for summer 2026 and summer 2027.<sup>11</sup> The current forecast shows increased needs of 14 MW in 2029 increasing to 51 MW by 2032, driven in large part by electrification of

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<sup>11</sup> The Non-Wires Solution portfolio is designed to replace the traditional solution of bus upgrades at the Jamaica 27kV Distribution Area Substation. The Company has consulted with Department Staff as required for Non-Wires Solutions, issued a request for proposals, received vendor proposals, committed funding, and filed notification of this Non-Wires Solutions Portfolio. Case 19-E-0065, *Proceeding on Motion of the Commission as to the Rates, Charges, Rules and Regulations of Consolidated Edison Company of New York, Inc. for Electric Service* (“2019 Rate Proceeding”), Request for Proposal – Non-Wires Solutions to Provide Demand Side Management for Sub-transmission and Distribution System Load Relief – Jamaica Substation Project (filed March 16, 2023).

transportation. These large increases cannot be managed in the long-term through Non-Wires Solutions.

**ii. Load Transfer**

The Company also determined that load transfers to existing distribution area substations are not available. The Corona and Brownsville Distribution Area Substations, which are in the adjacent Rego Park and Crown Heights Networks, respectively, are at capacity and cannot accept additional load from the Jamaica Network. As a result, the Company needs to build the new Idlewild Distribution Area Substation to supply the forecasted load. Further, the existing Jamaica Transmission Substation is not expandable for additional Points of Interconnection. Consequently, the Company needs to build the new Eastern Queens Transmission Station to supply power to Idlewild.

**2. The Project has Additional Reliability and Clean Energy Benefits that Facilitate Achievement of CLCPA Goals**

In addition to solving exceedance of the design capability at the Jamaica Distribution Area Substation, the Project provides other reliability and clean energy benefits.

First, the Project will facilitate achievement of State and City emissions goals by facilitating electrification. The Project will enable 170 MW of future customer growth in the Jamaica Network and 176 MW of future customer growth in the Springfield Network for electric vehicle adaptation, electrification of hot water heaters, stovetops, ovens, and clothes dryers in the summer, and new business.<sup>12</sup> Over the long run, as electrification of heating becomes more mainstream, the Project will also enable the additional margin to support progress towards New

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<sup>12</sup> Existing capacity on the Transmission system will allow for about 160 MW of future growth. To enable the 170 MW of future growth in the Jamaica Network and 176 MW of future growth in the Springfield Network (346 MW total), additional transmission expansion will be required.

York State's clean energy future goals. Accordingly, this Project will enable achievement of CLCPA goals, not just by enabling electrification, but because it will benefit disadvantaged communities through improved reliability.<sup>13</sup>

Second, the new Jamaica and Springfield Networks will have improved network reliability index ratings compared to the present Jamaica Network. This improved rating results from fewer megawatts transmitted over shorter feeder distances, fewer feeder components or possible points of failure, and less stress on those components.

Third, the new Eastern Queens Transmission Substation will provide interconnection points for energy storage, which advances the State's renewable energy goals included in the Climate Leadership and Community Protection Act. Based on future transmission planning requirements, the Project, with additional infrastructure, will enable large load, clean energy providers to interconnect with the Con Edison system.

Fourth, the Project will improve service to JFK Airport by enabling the creation of feeders where JFK is the vast majority of the load, which will avoid outages. These nearly dedicated feeders will also enable future expansion of JFK load with minimal load relief.

Fifth, the new Eastern Queens Transmission Substation will enable load relief for projected overloads in 2039 and 2040 at the Corona Distribution Area Substations in the Rego Park and Flushing Networks.<sup>14</sup> According to the Company's current Twenty Year Load Relief

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<sup>13</sup> The Commission has found that building on existing utility property is an indicator that a project does not disproportionately burden a disadvantaged community. In addition, projects that are needed for reliability, like the Jamaica Network Load Relief Project, do not disproportionately burden disadvantaged communities. Case 19-G-0309, Proceeding on Motion of the Commission as to the Rates, Charges, Rules and Regulations of The Brooklyn Union Gas Company d/b/a National Grid NY for Gas Service, et al., Order Approving Joint Proposal, as Modified, and Imposing Additional Requirements at 81-82 and Case 20-E-0380 et al., Proceeding on Motion of the Commission as to the Rates, Charges, Rules and Regulations of Niagara Mohawk Power Corporation d/b/a National Grid for Electric Service, Order Adopting Terms of Joint Proposal at 90.

<sup>14</sup> See footnote 2.

Program<sup>15</sup> the Corona II and Corona I Distribution Area Substations are forecasted to exceed design capabilities in 2039 and 2040 respectively. Con Edison's ability to support the Rego Park and Flushing Networks through the Eastern Queens Transmission Substation will enhance reliability in Queens and reduce the limited adjacent network support condition currently occurring in the Jamaica Network.

## V. COST RECOVERY

Con Edison requests that the Commission issue an order authorizing cost recovery for the development and construction of the Project no later than November 16, 2023 to provide the Company with the necessary assurances to begin the Project. Cost recovery can be through a surcharge or base rates, depending upon the timing of the project coming into service. Since the completion date for the Project is May 2028, customers will not see any rate impacts in the Company's current Rate Plan (through December 31, 2025).

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<sup>15</sup> The Company's Area Substation and Subtransmission Feeder Twenty Year Load Relief Program covers 2023 through 2042 and is based on the Load Forecast of November 18, 2022.

**VI. CONCLUSION**

The 2026 forecasted capability exceedance at the Jamaica Distribution Area Substation requires Con Edison to act now. Con Edison plans to manage this exceedance through a variety of measures until 2028, when the Reliable Clean City – Idlewild Project will provide the appropriate long-term solution. Accordingly, Con Edison respectfully requests that, no later than November 16, 2023, the Commission authorize the Company to build and recover the costs of the Reliable Clean City – Idlewild Project as set forth herein.

New York, New York  
August 22, 2023

Respectfully submitted,



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**Exhibit A**  
**Reliable Clean City – Idlewild Whitepaper**

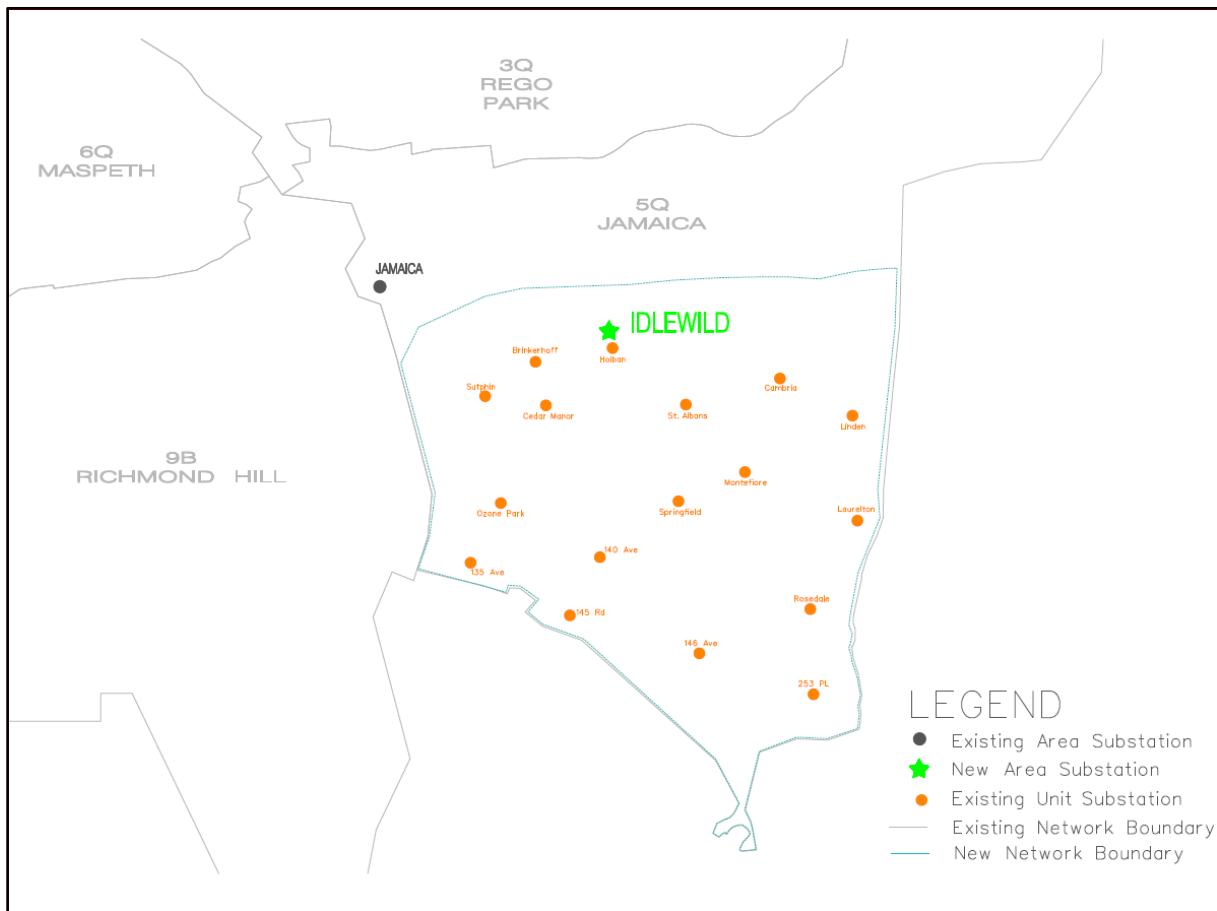
**DRAFT**  
**CECONY / Central and Electric Operations**  
**2023**

**1. Project / Program Summary**

Type: <input checked="" type="checkbox"/> Project <input type="checkbox"/> Program	Category: <input checked="" type="checkbox"/> Capital <input type="checkbox"/> O&M
Work Plan Category: <input type="checkbox"/> Regulatory Mandated <input checked="" type="checkbox"/> Operationally Required <input type="checkbox"/> Strategic	
Project/Program Title: <b>Reliable Clean City - Idlewild Project</b>	
Project/Program Manager: <b>Various</b>	Project/Program Number (Level 1):
Status: <input checked="" type="checkbox"/> Planning <input type="checkbox"/> Design <input type="checkbox"/> Engineering <input type="checkbox"/> Construction <input type="checkbox"/> Ongoing <input type="checkbox"/> Other: _____	
Estimated Start Date: <b>August 2023</b>	Estimated Date In Service: <b>May 2028</b>
<b>A. Total Funding Request (\$000)</b> Capital: <b>\$1,213,000 (2023-2028)</b> O&M: Retirement:	<b>B.</b> <input type="checkbox"/> 5-Year Gross Cost Savings (\$000) <input type="checkbox"/> 5-Year Gross Cost Avoidance (\$000) O&M: Capital:
<b>C. 5-Year Ongoing Maintenance Expense (\$000)</b> O&M: Capital:	<b>D. Investment Payback Period:</b> <b>(Years/months)</b>
<p>Work Description:</p> <p>This Reliable Clean City - Idlewild Project (Project) will provide load relief to the Jamaica 27 kV Distribution Area Substation. The project will consist of three parts: 1. Building a new 138 kV transmission substation, the Eastern Queens 138 kV Transmission Substation (“Eastern Queens”), which will supply the new Idlewild 27 kV Distribution Area Substation; 2. Building the new Idlewild 27 kV Distribution Area Substation (“Idlewild”); and 3. Transferring 170 MW from the Jamaica Network to the new Idlewild 27 kV Distribution Area Substation, thereby creating the new Springfield Network (“Springfield”). The Eastern Queens 138 kV Transmission Substation and the Idlewild 27 kV Distribution Area Substation will be co-located on a vacant parcel of Company owned land in Jamaica, Queens. The in-service date for the Eastern Queens Transmission Substation is April 2028, the in-service date for the Idlewild Distribution Area Substation is May 2028, and the Springfield Network in-service date will be May 2028.</p> <p>Eastern Queens will be an indoor 138 kV Gas Insulated Switchgear (GIS) Transmission Substation, arranged in a double ring bus configuration with provisions for future points of interconnection. It will include circuit breakers and four 138 kV connections, expandable to five, to supply Idlewild. To connect Eastern Queens to the Con Edison Transmission System, the company will intercept and re-route existing 138 kV feeder 903 (between Jamaica 138 kV Substation and LIPA’s Lake Success Substation) and existing 138 kV feeder 901 L and M (between Jamaica 138 kV Substation and LIPA’s Valley Stream Substation). The 138 kV feeders 901L/M and 903 currently facilitate the LIPA wheeling service which will not be affected by this project. After future, additional expansion, Eastern Queens will be capable of supplying another Distribution Area Substation to provide load relief for Corona 27 kV Distribution Area Substations Nos. 1 and 2.</p> <p>Idlewild will be an indoor 27 kV Distribution Area Substation, arranged in a double synchronous (SYN) bus configuration. It will include four 93 MVA, 138 kV/27 kV transformers, with provisions for an additional</p>	

transformer in the future. The substation will include fifty feeder positions, including seventeen new 27 kV feeders to supply the new Springfield Network.

The Company will split the Jamaica Network by transferring approximately 170 MW from the Jamaica Distribution Area Substation to Idlewild, thereby establishing the Springfield Network. New 27 kV feeders will be established in Idlewild and extended to pick up the seventeen 4 kV unit substations that comprise the Jamaica 4 kV grid load pocket. The creation of the new network will require approximately 131,000 ft. of new duct, 425 manholes, 680 sections of primary cable, and 17 switches. The map below approximates the network boundaries after the Jamaica Network Split and creation of the Springfield Network. The load transfer includes: the Jamaica 4 kV load grid along with the associated Springfield Gardens Autoloop and two small, segregated load pockets of network load inside the larger 4 KV non network consisting of 12 MW of load.



For the first phase of the Project, the Company will install a 138 kV Phase Angle Regulator and a 138 kV/27 kV Transformer. This equipment will connect to 138 kV feeder 901 L/M as well as extend and connect to existing 27 kV distribution feeders. This work is required in the event the Company encounters additional forecasted load growth sooner than 2028 or unforeseen delays with the Project and will enable emergency power injection to the 27 kV Jamaica Network. The majority of this work, including materials, equipment and labor is required for the construction of the Eastern Queens substation and the creation of the Springfield network. Once the Eastern Queens and Idlewild substations are in service (2028), all the equipment involved in this initial phase of the project will be repurposed or used as spare equipment. This portion of the project provides for an emergency means to supply the Jamaica network with an additional resource to sustain service to the area. As options are very limited to supply an emergency resource due to the geographical location of the network and vast size of the network, this work is required.

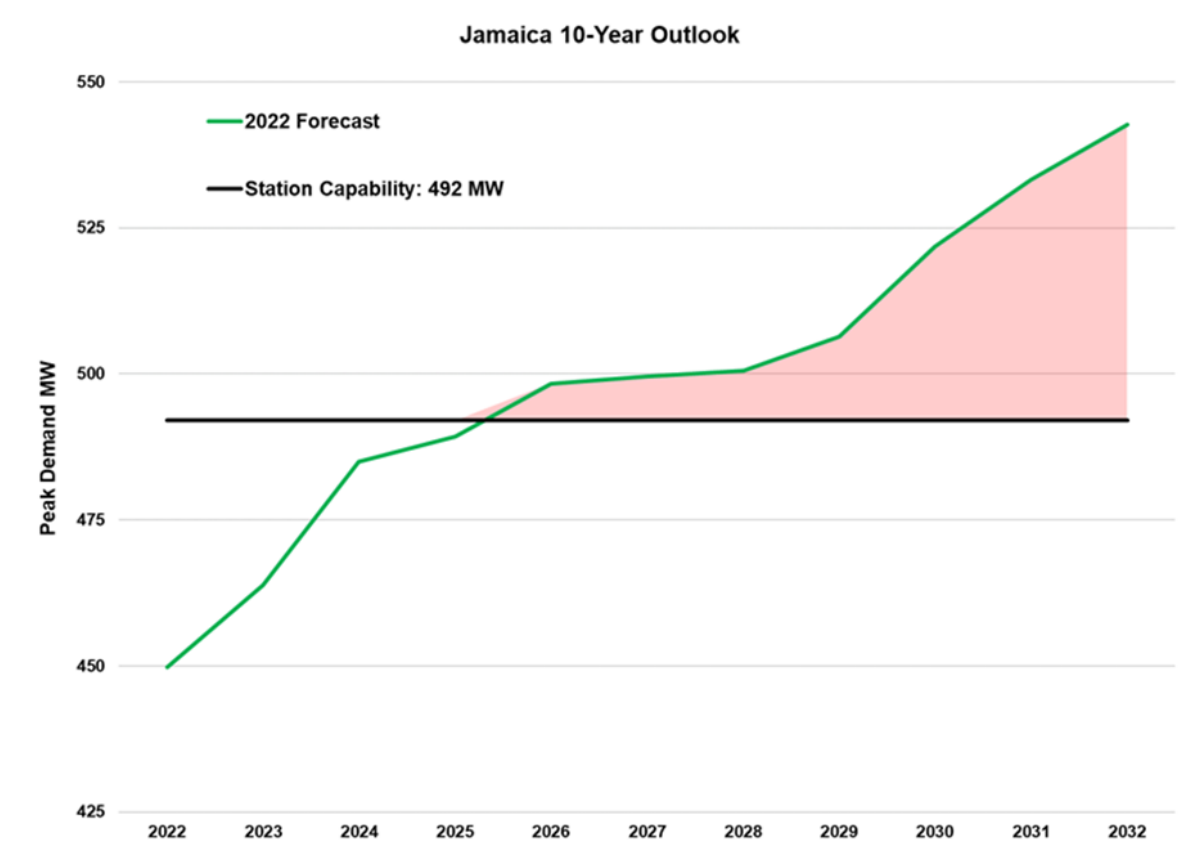


Engineering and long lead equipment procurement will begin in 2023 for this project and station construction is expected to begin in early 2025. Long lead equipment requirements for the Project includes, but is not limited to, transformers, gas-insulated switchgear, circuit switchers, capacitor banks, and transmission cables.

**Justification Summary:**

To identify near-term load relief needs, the Company used a ten-year forecast of peak load conditions and compared those projections to the substation and network capabilities. Solutions identified to alleviate forecasted overloads are designed to do so on a ten-year basis and the Company prioritized solutions that are both technically viable and least cost. The timing of investment for these solutions is based on their required lead times.

The Company’s current peak demand forecast for the Jamaica Network is as follows:



Based on the Company’s most recent peak demand forecast, Distribution Area Station Planning has determined that the Jamaica 27 kV Distribution Area Substation will exceed its design capability in 2026. Over the last few forecasting cycles, the peak demand forecast for the Jamaica Network has generally increased year over year. Higher weather-adjusted peak demand experienced in the summer of 2022 was a key driver of the most recent forecast increase. Electrification of vehicles and non-heating appliances continue to contribute to peak demand in the near term. Based on the forecast, to avoid overloads at the Jamaica 27 kV Distribution Area Substation, the Company must pursue Non-Wires Solutions to provide load relief for Jamaica 27 kV Distribution Area Substation until 2028, when the long-term load relief solution of Eastern Queens, Idlewild and Springfield Network can be placed in service.

Without the Project, the exceedance of 6 MW in 2026 increases to 51 MW by 2032.

Jamaica Load (MW)	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Peak Demand	464	485	489	498	500	501 <sup>(1)</sup>	506	522	533	543
Headroom/Deficiency (+ / -) <sup>(2)</sup>	28	7	3	(6)	(8)	(9)	(14)	(30)	(41)	(51)

(1) Net loading not reflecting company long-term network solution to transfer 170 MW to new Area Substation (Idlewild) in 2028

(2) Headroom / Deficiency based on current capacity of Jamaica Area Station (492 MW)

The Company must pursue the load relief solution for Jamaica 27 kV Distribution Area Substation that provides the most capacity, can accommodate additional electrification and maintains reliability. The Reliable Clean City – Idlewild Project is the only solution that achieves these objectives. To allow adequate time to build the new Eastern Queens and Idlewild stations while maintaining reliability, the Company is pursuing a Non-Wires Solution to reduce peak load in the Jamaica Network for 2026 and 2027. The Company has consulted with Department Staff as required for Non-Wires Solutions, issued a request for proposals, received vendor proposals, committed funding, and filed notification of this Non-Wires Solutions Portfolio on March 16, 2023 in Case 19-E-0065.

#### Relationship to 5-Year and Long-Range Plans and Enterprise Risk Management Strategy

The Company expects general increases in load, as well as electrification of vehicles and non-heating. Load projections in the 2023 – 2032 Ten Year Load Relief Program indicate that the Queens networks will encounter increasing overloads in ensuing years, with the Jamaica 27 kV Distribution Area Substation exceeding its station design capability. To address reliability design criteria and build in resiliency for various contingency events, the new Eastern Queens 138 kV Transmission Substation will be placed into service by 2028. This project will improve the reliability of the Jamaica and new Springfield Networks by allowing the Company to reduce network sizes and will establish feasible resiliency options for various contingency events, which are not available with the existing distribution system design. The new 138 kV transmission substation will also provide potential points of interconnection for energy storage systems.

By enabling load splits and smaller distribution networks in the Jamaica and Corona Transmission Load Areas, this program will progressively increase the reliability of the associated networks in both the near and long term. The Project will alleviate issues which limits the load capacity in the Jamaica and Corona 27 kV Distribution Area Substations. Once the project is in service, it will be more feasible to transfer out or partially restore the load emanating out of Jamaica and Corona No. 1 and No. 2 27 kV Distribution Area Substations, minimizing the impact of outages to customers. It will help the Company avoid public safety issues related to network failures and significant damage to company equipment.

The operational measures and system improvements implemented with this project would be sufficient in addressing load growth across Company networks in Queens, and satisfy reliability, resiliency, safety, and compliance regulations for the long term.

## 2. Supplemental Information

### Alternatives

**Non-Wires Solutions:** An alternative solution is to rely on Non-Wires Solutions to mitigate any future substation capacity exceedances. Energy efficiency, and other Non-Wires Solutions can provide cost-beneficial solutions across different customer segments that may help defer traditional solutions. Based on the magnitude of load relief required in the Jamaica Network, the Company has determined that Non-Wires Solutions are most appropriately suited as short-term solutions until Eastern Queens and Idlewild can be built. Therefore, there is no known contingency plan other than to pursue the identified traditional solution.

**Load Transfer:** Overloads at the Jamaica 27 kV Distribution Area Substation are predicted to occur in the current planning horizon (i.e., 2026). There is insufficient capacity at any adjacent Queens 27 kV Distribution Area Substations to make a load transfer feasible. Corona No. 1, Corona No. 2, and Brownsville No. 2 (Richmond Hill network) are the only 27 kV Distribution Area Substations geographically abutting the Jamaica network.

Brownsville No. 2 27 kV Distribution Area Substation is constrained by the Farragut to Brownsville 138 kV sub-transmission feeders, which will require load relief in the 10-year planning horizon. The establishment of Gateway Park 27 kV Distribution Area Substation, to be supplied by four 138 kV feeders from the new 345 kV Brooklyn Clean Energy Hub, will provide relief for the Farragut to Brownsville 138 kV sub-transmission feeders.

Although the Corona No. 1 currently has capacity of about 93 MW to accept some load from the Jamaica 27 kV Distribution Area Substation, such a transfer is not feasible. The cost is high, and the work is complex as the required feeder work would have to cross or bypass multiple natural and manmade barriers including the North Grand Central Expressway, the Long Island Expressway, and multiple parks. The transfer would require running feeder extensions from the Flushing (07Q) network through the Rego Park (03Q) network into the Jamaica (05Q) network. These extensions would dramatically reduce the reliability of the Flushing (07Q) network and could result in overloading the existing 07Q feeders. The load transfer would require the creation of a subnetwork involving the separation and creation of a network fringe which reduces the secondary reliability of the area.

The Corona No. 2 27 kV Distribution Area Substation has a very limited margin to accept a load transfer, as only 14 MW of capacity is available at the end of the 10-year planning horizon. A transfer to Corona No. 2 would only move it closer to exceeding its design capability and require the Company to move up planned work for Corona No. 2 within the 10-year planning horizon.

**Jamaica Bus Uprates:** Bus uprates requires replacing the existing 27 kV bus with higher capacity bus throughout a majority of the substation and within the existing physical space. The scope requires removal and replacement of bus from each transformer and includes the distribution load bus sections. This work requires sequential outages of each transformer and distribution bus section for approximately 2 months in duration each. The Jamaica 27 kV Distribution Area Substation topology is unique in that many distribution load bus sections contain six distribution feeders each. During each scheduled outage to replace the bus duct, a station supply transformer and the associated distribution feeders are required to be out of service. For most of the scheduled outages, this means six distribution feeders will be out of service for the duration of the upgrade. During these long periods of time, there is no way to recall the equipment to service should any additional station contingency or unforeseen weather event occur. The Company evaluated the bus uprates based on the 2021 forecast when the

forecasted need arose in 2028. The 2022 forecast demonstrated that the Jamaica 27 kV Distribution Area Substation will exceed its design capability in 2026. As a result, given the five-year schedule to complete the work and the complexity executing the bus uprate work, the Company has decided to pursue a Non-Wires Solution Portfolio to provide load relief while the Project is constructed.

#### **Risk of No Action**

In the event the Jamaica 27 kV Distribution Area Substation becomes overloaded, load shedding may be required during peak load conditions in the Jamaica Network (the Company's largest network in both customers and peak usage) which could cause thousands of customers to experience service outages. Additional risk in not pursuing the establishment of the Idlewild 27 kV Distribution Area Substation is potential impacts to critical customers (e.g., JFK Airport, LIRR Jamaica Station) served by the Jamaica 27 kV Distribution Area Substation.

Without pursuing the project, the Jamaica Network could be unable to maintain reliable system power flow controls and system reliability in addition to causing resiliency concerns and/or possible customer outages for an extended period during peak load conditions.

#### **Non-Financial Benefits**

This project will provide the necessary reliability and resiliency in an area of New York City that serves many critical loads (e.g., airports, transportation hubs, and hospitals) in a densely populated area where many buildings have elevators and various equipment loads.

The Eastern Queens portion of the project, along with a future 345kV expansion project, will provide transmission capacity to enable local growth and facilitate the integration of future bulk renewable energy sources. Under this future scenario, Eastern Queens would create points of interconnection (POIs) on the transmission system that do not currently exist. These POIs could be used by third party generators seeking to supply clean energy to the Con Edison and New York State Transmission Systems. There is also potential for the Eastern Queens portion of the project, as outlined in this document, to provide POIs for energy storage.

#### **The new Network and Distribution Area Substation include many benefits that will provide for future load growth and electrification, including:**

- The transfer will allow the future creation of dedicated cubicles to transfer the JFK airport load. This will avoid unnecessary outages involving network transformers or other points of potential failure, thereby increasing the reliability for JFK. These dedicated feeders will also allow for future expansion of JFK load without any need for additional infrastructure investments for load relief.
- The non-network load area being transferred to the new Distribution Area Substation will experience large load increases due to climate change electrification and increased use of EV. The extra capacity created will enable future expansion by using these non-network feeders to supply Multibanks that can be expanded to create localized grids with improved reliability.
- Feeders containing 4 kV stations that also supply a 27 kV secondary network are known to cause load shifts on the 27 kV grid as the load transfers to nearby feeders after feeder contingencies. The large 27 kV network load remaining in Jamaica will benefit from removing this risk factor. When a 27 kV feeder that is connected to the 4 kV grid fails, the load gets transferred via 4 kV

interties to other 4 kV unit stations and their 27 kV supply feeders. Additionally, the secondary network redistributes the network load to other supplying feeders. This can cause substantial amounts of load to be transferred to related feeders. This sudden increase in load can stress the remaining in-service 27 kV feeders supplying the load area and cause feeders to trip during multiple contingency events. The new Springfield network will supply mostly 4 kV load with limited 27 kV network load while the remaining Jamaica network will have minimum 4 kV station load, reducing risk to both networks.

- The existing Jamaica 27 kV feeders are large and heavily loaded in terms of MW per feeder. The creation of the new network will divide the load area into two distinct networks, each with shorter feeder runs that carry fewer MWs. The secondary benefit of this will be a reduction in the network reliability index rating of the Jamaica and Springfield Networks.
- No new secondary network fringe or boundary will be created since the load transferred is non network and the small network load pocket of 12 MWs is nested within the Jamaica 4 kV grid. This will avoid creating new weaknesses in the load areas being transferred since the new work does not change existing secondary network boundaries. Normally, new network boundaries require additional reinforcement to maintain reliability.
- This project will also improve the resiliency of the Jamaica and Springfield Network and prepare them for electrification. Instead of solving overloads by upgrading cable with lesser reliability improvements, this program will solve future primary overloads while greatly increasing the reliability of the network by introducing new feeders.

**Summary of Financial Benefits and Costs**

N/A

**Technical Evaluation / Analysis**

**Project Relationships (if applicable)**

Jamaica Bus Uprates

**Basis for Estimate**

The funding request is based on order of magnitude estimates. The breakdown for the total project cost (through 2028) is as follows (in \$000s):

- Eastern Queens - \$592,105
- Idlewild Area Substation - \$380,127
- Jamaica Network Split (Springfield) - \$242,066

*Total Project Cost (including 2028): \$1,214,298*

**3. Funding Detail**

Historical Spend

	<u>Actual 2016</u>	<u>Actual 2017</u>	<u>Actual 2018</u>	<u>Actual 2019</u>	<u>Historic Year</u> (O&M only)	<u>Forecast 2020</u>
<b>Capital</b>						
<b>O&amp;M</b>						
<b>Retirement</b>						

**Total Request (\$000):**

**Total Request by Year:**

	<u>Request 2023</u>	<u>Request 2024</u>	<u>Request 2025</u>	<u>Request 2026</u>	<u>Request 2027</u>	<u>Request 2028</u>
<b>Capital</b>	\$19,052	\$149,334	\$300,145	\$368,983	\$253,493	\$123,291
<b>O&amp;M*</b>						
<b>Retirement</b>						

**Capital Request by Scope:**

<u>Scope</u>	<u>2023</u>	<u>2024</u>	<u>2025</u>	<u>2026</u>	<u>2027</u>	<u>2028</u>
Eastern Queens Switching Station	\$8,848	\$70,538	\$136,409	\$172,310	\$129,000	\$75,000
Idlewild Area Station	\$10,204	\$56,373	\$80,950	\$117,600	\$77,000	\$38,000
Jamaica Network Split (Springfield)	\$0	\$22,423	\$82,786	\$79,073	\$47,493	\$10,291
<b>Total</b>	<b>\$19,052</b>	<b>\$149,334</b>	<b>\$300,145</b>	<b>\$368,983</b>	<b>\$253,493</b>	<b>\$123,291</b>