New Cingular Wireless PCS, LLC ("AT&T") application for collocation at existing wireless telecommunications facility located at 21 New Lane, Vineyard Haven

Please find below our response to the MVC staff follow-up questions regarding the proposal:

1. Clarify the actual height of the current tower, and the total height as proposed.
   The height of the current tower is 60’. To accommodate a 2nd carrier, the project includes a 15’ extension to the existing tower, which would increase the height of the tower to 75’. Please see attached Tower Elevation page. Note: The extension will be manufactured to match the existing design aesthetics.

2. Please provide a written statement from American Cell Tower or AT&T regarding the feasibility of battery-powered backup as an alternative to a diesel generator. A written statement that includes any company policy regarding battery storage, consideration of alternative power sources, or an offer to provide battery storage instead of diesel, would be very important.
   The facility already has a battery-powered backup system incorporated; however, it is not an alternative to a generator. The battery system is designed to provide temporary uninterrupted power to the tower during an emergency. It is utilized only during the transfer of power to the generator. The batteries offer only a short-term supply of power (about 4 hours) and therefore are not a feasible alternative during a typical outage. Please see attached Statement from ATC.

3. Describe any spill containment system or safeguards for the generator.
   The current generator proposed with the AT&T facility is a Polar Power 8220-603 Series 15KW Backup Diesel DC unit. As per the manufacturer the unit is designed to meet all safety standards (conforms to UL STD 2200, certified to CSA STD C22.2 No.100, fuel tank is UL 142 listed, meets EPA emission regulations, CA/MA emissions compliant). The generator fuel tank is double walled and has a catch basin. In addition, the unit has warning alarms for the Diesel Fuel Tank Rupture Basin and contact closure for remote indication for diesel fuel leak and fuel level over 90%. Please see the attached Specification Sheet.
4. Provide the height of the proposed GPS antenna.
As shown on the Construction Drawings, the proposed GPS antenna is to be mounted to an Ice Bridge Support Post. This post is typically 6’ tall. The antenna is 1’ tall, therefore the total overall height of this antenna would be approximately 7’ above the ground. Details shown below:
Battery-only backup feasibility: The batteries can only handle short periods of discharge (around 4 hours), and therefore are not feasible alone for backup power; they are used only during the brief period when commercial power goes out, before generator kicks in.

Thank you,

Gary Waitt  
*Project Manager, Site Development*  
**American Tower Corporation**  
10 Presidential Way  
Woburn, MA 01801  
781-926-4963 office  
Gary.Waitt@americantower.com

**Additional Resources:**  
[Submit customer feedback](#) on working with American Tower | [Login or register](#) for an American Tower Account
Founded in 1979 Polar Power specialized in solar photovoltaic systems, solar air conditioning and refrigeration. We developed and provided photovoltaic charging controls for telecommunications in the 1980s along with DC generators for the military. In 1994 we were first to provide DC generators with remote control and monitoring to the telecommunications industry. Polar’s success is based on engineering generators to meet the very specific needs of each application. Telecom site optimization is best met with the DC generator technology as the loads and batteries are DC. It makes no sense to install an AC generator and convert the output to DC. The AC generators are designed for a wide range of applications and they are not specifically produced for telecom applications so there are issues with reliability, space, and fuel efficiency. Polar can save you considerable time and cost in permitting, installing, purchasing, and maintaining a backup generator. We reduce CAPEX and OPEX costs while improving backup reliability.

**Intertek 4003706**

**Conforms to UL STD 2200**

**Certified to CSA STD C22.2 No. 100**

Meets EPA Emission Regulations

CA/MA Emissions Compliant

2 year standard warranty

The concepts and features behind Polar’s Hybrid application generator for telecommunications include:

**SMALL FOOTPRINT.** Polar’s DC generator is considerably smaller in size than an AC generator. You can now backup sites that could not accommodate an AC generator. Smaller also means less cost for space leasing.

**LOW MAINTENANCE.** Due to oversized oil sump, and oil/fuel filtration system.

**LOW ACOUSTIC NOISE.** <62 dBA @ 7 meters for diesel, and low vibration so as not to disturb the local residents or building landlords.

**LIGHTWEIGHT.** Up to 1/3 the weight of a comparable AC generator.

**CORROSION RESISTANT.** All-aluminum enclosure with stainless hardware for low maintenance, and long service life.

**FUEL EFFICIENT.** Up to 85% fuel savings due to smaller engine displacement, high efficiency alternator, and variable speed operation.

**RODENT RESISTANT.** Small animals can quickly destroy a generator set by gnawing on wires, fuel lines, radiator hoses, etc. Cooling air inlets and outlets have perforated aluminum screens to keep small rodents and large insects out. Stainless steel wire braid is placed over fuel and radiator lines to prevent damage.

**SUPERCAPACITOR STARTER.** Failure to start is the number one problem plugging generator reliability and typically this is caused by a bad starting battery. Polar unique design has replaced the starting battery with a Super Capacitor. Capacitors are more reliable and last longer than batteries (10-15 year life).

**LONG LIFE.** Controls and wire harnesses are designed to exceed a 20 year life. Higher grade, longer life electrical wire (UL 3173), weather tight connectors, gold plated connector pins on signal circuits. No transfer switches are required.

**ADVANCED MONITORING.** Remote diagnostics, control, and monitoring. Ethernet and RS232 standard, with optional SNMP.
### COMPARING THE COST OF AC vs DC

<table>
<thead>
<tr>
<th>Time</th>
<th>AC</th>
<th>DC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transfer switch required</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Rectifier</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Permitting costs</td>
<td>$$$</td>
<td>$</td>
</tr>
<tr>
<td>Shipping to site and installation cost</td>
<td>$$$</td>
<td>$</td>
</tr>
<tr>
<td>Site preparation/reinforcing structures</td>
<td>$$$</td>
<td>$</td>
</tr>
<tr>
<td>Ethernet/RS232 remote control and monitoring</td>
<td>Extra</td>
<td>Standard</td>
</tr>
</tbody>
</table>

### 8220 ALTERNATOR SPECIFICATIONS

- **Type**: Permanent Magnets, NdFeB
- **Weight (lb/kg)**: 46.5/21
- **Regulation Type**: Variable engine speed operation over 500 RPM range
- **Stator**: 3 phase/32 poles
- **Overcurrent Protection (A)**: 15 kW - 350
- **Disconnect Means**: Fused Disconnect, sized for each generator size.
- **Voltage Range (VDC)**: 44 to 62
- **Alternator Exhaust Flow (cfm/cmm)**: 130 to 180 or 3.68 to 5.1
- **MTBF (hr)**: 100,000+

### 8220 ALTERNATOR FEATURES

- No mechanical adjustments
- Very lightweight
- High quality electrical output
- Voltage and current regulation
- Up to 94% efficiency
- -40° to 70° C operational range
- Class 220 C insulation
- Anodized type III process for aluminum parts
- Nickel plating for steel parts
- Stator is varnished

### STARTER SUPERCAPACITOR SPECIFICATIONS

- **Model**: 20-16-0001
- **Storage Rating (Farads)**: 500
- **Voltage (VDC)**: 13-14.4
- **Weight (lb/kg)**: 12.1/5.5
- **Operating Temperature (°C/°F)**: -40 to 65 or -40 to 149
- **Service Life (year)**: 10 to 15

### CHARGER SPECIFICATIONS

- **Model**: 00-10-0015
- **Input Voltage (VDC)**: 28.8 to 60
- **Output Voltage (VDC)**: 14 to 14.4
- **Recharge time from 0 VDC (min)**: 10
- **Recharge time from 8 VDC (min)**: 2
- **Weight (lb/kg)**: 2.2/1

### FUEL TANK SPECIFICATIONS

- **UL Rated Capacity (gal/L)**: 54/204
- **Tank Alarms**: Yes
- **Visual Gages**: Yes
- **Catch Basin (gal/L)**: 5/19
- **Listings**: UL 142 (double wall)
### ENGINE SPECIFICATIONS

<table>
<thead>
<tr>
<th>Engine Model</th>
<th>Yanmar 3TNV88</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cylinders</td>
<td>3 In-line</td>
</tr>
<tr>
<td>Displacement (L)</td>
<td>1.642</td>
</tr>
<tr>
<td>Bore (in./mm)</td>
<td>3.4/88</td>
</tr>
<tr>
<td>Stroke (in./mm)</td>
<td>3.5/90</td>
</tr>
<tr>
<td>Intake Air System</td>
<td>Naturally Aspirated</td>
</tr>
<tr>
<td>Engine HP</td>
<td>24</td>
</tr>
<tr>
<td>Emissions Compliance</td>
<td>EPA and CARB Certified</td>
</tr>
<tr>
<td>Variable RPM</td>
<td>1500 to 1850</td>
</tr>
</tbody>
</table>

### ENGINE LUBRICATION SYSTEM

<table>
<thead>
<tr>
<th>Oil Filter Type</th>
<th>Full flow spin-on canister</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oil Capacity</td>
<td>6.7 L</td>
</tr>
<tr>
<td>Oil Pressure Switch</td>
<td>Yes</td>
</tr>
<tr>
<td>Oil Pressure Transducer</td>
<td>Optional</td>
</tr>
</tbody>
</table>

### ENGINE COOLING SYSTEM

<table>
<thead>
<tr>
<th>Type</th>
<th>Pressurized Aluminum Radiator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water Pump</td>
<td>Belt-driven, Pre-lubed, self-sealing</td>
</tr>
<tr>
<td>Fan Type</td>
<td>12 V Electric Fans</td>
</tr>
<tr>
<td>Fan Quantity</td>
<td>6</td>
</tr>
<tr>
<td>CFM</td>
<td>1300</td>
</tr>
<tr>
<td>M³/hr.</td>
<td>2200</td>
</tr>
<tr>
<td>Fan Mode</td>
<td>Pusher</td>
</tr>
<tr>
<td>Temperature Switch</td>
<td>Yes</td>
</tr>
</tbody>
</table>

### FUEL SYSTEM

<table>
<thead>
<tr>
<th>Type</th>
<th>Diesel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fuel Pump Type</td>
<td>Electrical</td>
</tr>
<tr>
<td>Injector Type</td>
<td>Mechanical</td>
</tr>
<tr>
<td>Fuel Filtering</td>
<td>Paper element</td>
</tr>
</tbody>
</table>

### FUEL CONSUMPTION

<table>
<thead>
<tr>
<th>Output (kW)</th>
<th>gal/hr</th>
<th>L/hr</th>
</tr>
</thead>
<tbody>
<tr>
<td>3TNV88</td>
<td>15</td>
<td>1.02</td>
</tr>
</tbody>
</table>

### ENVIRONMENTAL

<table>
<thead>
<tr>
<th>Operating Temperature (°C/°F)</th>
<th>-40 to 72 or -40 to 162</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating Humidity %</td>
<td>100</td>
</tr>
<tr>
<td>Cold Start Aids</td>
<td>Glow Plugs</td>
</tr>
</tbody>
</table>

### SOUND EMISSIONS

Contact us for current sound data.

### POWER ADJUSTMENT FOR AMBIENT CONDITIONS

<table>
<thead>
<tr>
<th>Temperature Deration</th>
<th>1% derate for every 5.6 °C (10 °F) above 25 °C (77 °F)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Altitude Deration</td>
<td>3% derate for every 300 m (1000 ft) above 91 m (300 ft)</td>
</tr>
</tbody>
</table>

### WEIGHS AND DIMENSIONS

<table>
<thead>
<tr>
<th>Dry Weight (lb/kg)</th>
<th>1242 / 564</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimensions (LxWxH) (in/cm)</td>
<td>61 x 40 x 45/155 x 102 x 115</td>
</tr>
</tbody>
</table>
### ENGINE COOLING

<table>
<thead>
<tr>
<th>System coolant capacity (gal/L)</th>
<th>2.2/8.3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum operation air temperature on radiator (°C/°F)</td>
<td>57/135</td>
</tr>
<tr>
<td>Maximum ambient temperature (°C/°F)</td>
<td>60/140</td>
</tr>
</tbody>
</table>

### COMBUSTION REQUIREMENTS

| Flow at rated power (cfm/cmm) | 68/1.92 |

### EXHAUST

| Exhaust flow at rated output (cfm/cmm) | 135/3.82 |
| Exhaust temperature at rated output (°C/°F) | 480/900 |

### CONTROLLER FEATURES

- **Controller Type**: Supra Model 250
- **4-Line Plain Text LCD Display**: Simple user interface for ease of operation
- **Engine Run Hours Indication**: Standard
- **Programmable Start Delay**: Standard
- **Run/Alarm/Maintenance Logs**: Standard
- **Engine Start Sequence**: Cyclic cranking: 5 sec on, 45 sec rest (3 attempts maximum)
- **Starter Supercapacitor Charger**: Standard
- **Field Upgradeable Firmware**: Standard
- **Automatic High Engine Temperature Shutdown**: Standard
- **Automatic Voltage Regulation with Over and Under Voltage Protection**: Standard
- **Overcrank/Overspeed**: Standard
- **Exerciser**: Programmable, weekly/bi-weekly

### WARNING ALARMS

- **Low Diesel Fuel Level**: Standard
- **Diesel Fuel Tank Rapture Basin**: Standard
- **Low/High Supercapacitor Voltage**: Standard
- **High Water Temperature**: Standard
- **Low Oil Pressure**: Standard

### CONTACT CLOSURE FOR REMOTE INDICATION

- **Shutdown Alarm**: Standard
- **Warning Alarm**: Standard
- **Engine Run**: Standard
- **Low Diesel Fuel Level**: Standard
- **Diesel Fuel Leak**: Standard
- **E-Stop Depressed**: Standard
- **Fuel Level Over 90%**: Standard
54 GALLON TANK CONFIGURATION

1" EMT [GROUNDS]
2" EMT [2 x 250 MCM]

fuel service
air intake
engine exhaust
hot air exhaust

54 gallon fuel tank

DIMENSIONS ARE IN INCHES
TOLERANCES ARE:
MATERIAL --
FINISH --

DRAWN CHECKED ENG APPR. MFG APPR. Q.A. DATE

TITLE: SCALE: 1:16
SIZE DWG. NO. REV
WEIGHT: --
88-25-0100-1 A-5

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COMMENTS: 2/16/17