



CUSTOMER
**Skunk Creek Landfill Gas
Generation Project**

Facility Study Report
APS Contract No. 52096
June 2, 2009

Prepared by:
**APS Transmission
Construction Projects**

Interconnection Facility Study Results

Skunk Creek Landfill Gas Generation Project

Interconnection of a Proposed 4600 kW Generating Facility to Arizona Public Service Company's (APS) Transmission System at Adobe Substation

Background: CUSTOMER (Customer) submitted a Small Generator Interconnection Request to Arizona Public Service Company (APS or Transmission Provider) under the APS Federal Energy Regulatory Commission (FERC) approved Tariff for Interconnection of Generating Facilities dated August 13, 2007 to interconnect a 4,600 kW synchronous generator for a total of 4,600 kW to APS's distribution system. As a result of Customer's request, APS determined that an Interconnection Feasibility Study was required and Customer and APS entered into an Interconnection Feasibility Study Agreement, APS Contract No. 52052. Subsequent to the delivery of an acceptable Feasibility Study Report, Customer decided to continue with the interconnection process and APS agreed to skip the System Impact Study and proceed directly to this Facility Study under APS Contract No. 52096, the Facility Study Agreement.

Customer intends to invest in, construct, own, maintain and operate a small Generating Facility ("GF"), which will be connected and operated in electrical parallel with APS's electric distribution system via means of a dedicated generator interconnection tie line. (APS defines voltages below 69 kV as "distribution".) For the purpose of this Study, and in the absence of more specific information, it is assumed that the Point of Interconnection along with associated metering will be located approximately at or near Customer's step-up transformer and at a distribution interconnection voltage of 12.5kV as shown in the attached sketch (see Attachment A One Line Diagram).

The Customer has identified that they will be engaging in wholesale energy sales from the output of this generator to energy customer(s) other than APS. Therefore the Customer shall be required to pay an increased monthly Direct Assignment Charge related to their use of the APS distribution system including the Adobe substation 12/69 kV transformers to reach the APS Transmission System, such charge being estimated within this study report. This increase is in addition to the Direct Assignment Charge related to the Customer's responsibility for the Operations and Maintenance costs associated with the sole-use Interconnection Facilities, such facilities ownership which is transferred to APS at the completion of construction. Also, due to the expected wholesale sale of energy, this proposed interconnection is subject to the successful execution of a FERC Small

Generator Interconnection Agreement (SGIA) between APS and the Customer.

APS assumes that the proposed Generating Facility will reside within the APS North American Electric Reliability Corporation (“NERC”) Balancing Authority with the actual output of the GF dynamically scheduled to the appropriate receiving Balancing Authority. The Customer must present any optional arrangement for APS’s review for its potential impact upon the estimated interconnection costs and/or timelines contained within this report.

The following Interconnection Facility Study results are provided:

**Location Address
Of Generating**

Facilities: **Skunk Creek Landfill**

Study Requested by: Customer

Estimated In-Service Date: 4th Quarter of 2009
(Roughly estimated as October 1, 2009 with a Commercial
Operation Date of June 2010.)

Facility Study Results

As required in the Interconnection Facility Study Agreement, the information on the following items is identified:

(i) All permitting/siting requirements

Line route is located in the City of Phoenix and Maricopa County and for purposes hereof. Permit(s) will be required before construction can begin. In order to meet the Customer's in-service date of fourth quarter of 2009, all necessary permits must be obtained by April 2009. (Please note that as of the date of this report, this process remains in-progress with the City of Phoenix. APS has filed the easement and the City of Phoenix requested special staking in order to review the pole locations. APS staking was completed the week of May 11th and the City is now reviewing.) In the event that APS is unable to obtain the appropriate permits and/or easements by April 2009, the estimated In-Service Date may have to be delayed. If APS is unable to obtain permits and/or easements for the expected line route in time for the new In-Service estimate of fourth quarter 2009, and another line route is necessary, the estimated costs and timelines herein shall be revised.

(ii) Identify the necessary rights-of-way

APS expects that the dedicated line will be located in existing road right-of-way or private easements. As noted above, should APS be unable to obtain the necessary right-of-way or private easements for the line and structures, the estimated costs and timelines herein shall be revised to reflect the new design, line route and other factors impacting the facilities required to provide interconnection service to the Customer.

Subject to the City of Phoenix permitting/siting process, it is expected that APS will extend its distribution system by installing a new dedicated generator interconnection tie line located in a dedicated easement, provided by the owner of the property, the City of Phoenix, as appropriate, on the Skunk Creek Landfill from the existing APS Adobe Substation located on 35th Ave south of Happy Valley Road to approximately 1000' east of the centerline of 35th Ave, north of Pinnacle Peak Rd., to the southwest corner of the Customer's property. It is assumed by APS that the Customer will render assistance in the permitting/easement process as may become necessary. The final route for the design and installation of APS's 12.47kV feeder will be determined based on final engineering and the City of Phoenix permits. Under the above assumptions, the APS design is nearing completion

(iii) Describe regulatory and siting process

APS does not anticipate having to obtain regulatory and siting approval based upon the expected line route to be used. The City of Phoenix permitting process is typically inclusive of its siting process. There would be

no Arizona Corporation Commission siting process required for distribution facilities.

(iv) Detailed Description of the required Interconnection Facilities and Associated Costs.

- Customer has requested interconnection of their facilities at their small Generating Facility located at the Skunk Creek Landfill. APS will extend its distribution system by installing an APS-owned, dedicated 12.47kV generator interconnection tie line at Customer's expense. A dedicated generator interconnection tie line is required for operational safety and reliability of the APS distribution system. It will originate at the APS-owned Adobe Substation and terminate at the utility metering section to be located at the small Generating Facility approximately at the southwest corner of the Customer's property. Subject to the City of Phoenix granting the required permits, it will be located within the Skunk Creek Landfill and requires a short run of 3-750A cable in 2-5" conduits and approximately 4,400' of overhead (See attachment A and B). In addition, 1-4" conduit with inter-ducts will be added to run fiber optic cable, plus the necessary overhead installed fiber, for a required transfer trip relay scheme that will be required between APS's feeder breaker in its Adobe Substation and the Customer's main breaker at its Generating Facility. No fiber will be available for Customer's use.
- APS-owned 12.47kV Substation bus extension with switch and required equipment.
- APS-owned 12.47kV Substation breaker and controls, protective relaying for both the 12.47kV and 69kV areas within the APS-owned system.
- A Customer-owned/provided visibly-open Disconnect Device equipped with grounding provisions acceptable to APS and APS-owned bi-directional utility metering equipment. This switch to remain under the control authority of APS.
- Install fiber optic cable and communication equipment for communication with the APS Energy Control Center Energy Management System (ECC EMS) and protection of the new Interconnection Facilities. The protective relaying system is a permissive overreading scheme with transfer tripping capability.
- Communication to Remote Terminal Unit (RTU) for EMS. APS shall furnish and install, at Customer's expense, PT's and CT's in Customer provided metering enclosure. The PAS provided (Customer-cost) meter shall have analog output for Customer use. APS shall provide Customer with "cut sheets" (templates) in order for Customer to locate this equipment in their power distribution center.
- APS requires bi-directional metering to be installed in the switchgear at the Customer's small Generating Facility at Customer's expense. These meters shall be as close as practical (with APS location approval) to the Point of Interconnection (POI, see attached diagram), in the Customer's Service Entrance Section (SES). In addition, APS will require metering and an RTU (appropriately located to which these meters will be connected) to be installed at the output of the generator at Customer's expense. The meters and RTU will be owned and operated by APS. Details regarding access to the RTU and meters will need to be addressed in the Operating Agreement

between APS and the Customer. The RTU will carry the metering data back to Adobe Substation using some of the fibers to be installed. Customer is solely responsible for providing a suitable AC or DC power supply for the RTU that meets APS's requirements.

- APS's good faith non-binding estimated cost of the facilities described above is \$699,126.52 (see Attachment C) excluding costs associated with obtaining City of Phoenix permits, easements or income tax or other tax effect and the cost associated with any Customer-owned equipment required for the interconnection of the generators including protective relaying and a visible open utility disconnect switch. Please note: that all trench and conduit required shall be supplied by the Customer and is excluded from the above costs. Should the Customer desire APS to perform the trenching and conduit, the estimate of cost is \$18,864. This estimated cost is not included in the totals above or in section (viii) "Applicable cost responsibilities".

(v) A Detailed Description of Major System Protection Facilities required and Associated Costs

1. System Protection Facilities to be installed by APS at Customer's expense.
 - Refer to Attachment A
 - APS-owned Adobe Substation 12.47kV breaker and controls
 - APS-owned Adobe Substation 12.47kV bus extension and equipment
 - Schweitzer SEL351 with 50/51/51N feature protective relay with the Mirrored Bit option at the APS-owned Substation 12.47kV breaker to accomplish the transfer tripping of the GF via fiber optic cable. This relay has the advantage of being able to communicate relay to relay and make the 50/51/51N elements operate in a directional mode.
 - An additional APS-owned relay on the 69kV side to detect ground over-voltages on the 69kV system in case the 69kV system becomes isolated and fed from the generators.
 - Devices equipped with grounding provisions acceptable to APS.
 - The cost of these facilities is included in the project cost quoted in item (iv).
 - Note that APS is anticipating the elimination of the underground portion at Adobe by utilizing the existing pole at the corner of the substation. APS Substation Design Group will have the ultimate approval of this plan when the final design is submitted for internal approval. At the site, the Customer shall provide 2-5 inch conduits for connection to the overhead conductor with Customer providing the necessary trenching to the APS termination. APS will provide the final wire termination at Customer expense.
2. System Protection Facilities installed by Customer at its Generating Facility and at its expense:

This study does not specifically address any requirements for the Customer Generating Facilities. However, the Customer must comply with all APS requirements for a generator operating in parallel with APS's electrical system. For interconnection at the 12kV level, interconnection requirements are specified in the APS document titled: Interconnection Requirements for Distributed Generation (APS IRDG manual). This document is available at: <http://www.oatioasis.com/azps/index.html> in the folder titled: Generation Interconnections, as "Distributed Generation Interconnection Requirements".

- The Customer small Generating Facility must comply with the APS safety, metering, protection, and contractual requirements specified in the relevant APS documents pertaining to the interconnection and operation of a small Generating Facility in parallel with the APS distribution system. All relevant sections of the APS Distribution Interconnection Agreement, as referenced in the IRDG manual, will be incorporated and attached to the SGIA. A sample copy of this agreement is available upon request from APS or for download at the web address provided above.
- Minimum control and protective devices installed at the facility's main 15kV circuit breaker as follows:

A Schweitzer SEL351 relay that incorporated the following functions:

- (a) Over / Under Frequency
 - (b) Over / Under Voltage
 - (c) 50/51/51N functions.
 - (d) Alarm contacts to trip off the generators in the event of relay failure.
 - (e) Transfer trip
- Circuit breaker on each of the Customer's generator, with the following minimum control and protective device(s) installed on the generator breaker.
 - (a) Synchronizing facilities
 - Suitable interlocks to prevent any breaker or switch from allowing the APS grid to be closed onto an energized out-of-sync Customer bus or generator. Any potential open points such as breakers, fused disconnect switches, etc, located between the generator breaker and utility service need to be appropriately equipped with contacts that will instantaneously trip the generator breaker if any such switch were opened while the generator breaker was closed. This is to prevent the opening and subsequent (inadvertent) reclosing of such a breaker or switch onto an un-synchronized generator. Suitable block-close circuits to be included as applicable.
 - Such other equipment as shall mutually be agreed upon by the Customer and APS from time to time during the term of this Agreement.

(vi) Diagrams detailing how APS proposes to interconnect Customer's small Generating Facility (GF) to the Transmission System

See Attachment A.

(vii) Details requiring upgrades to the Transmission System if required (but not reflective of potential Transmission System upgrades that may be required pursuant to a request for firm Transmission Service)

None

(viii) Applicable cost responsibilities

Customer is responsible for all costs of the APS-owned facilities required to interconnect the Generating Facility including the APS-owned 12.47 kV dedicated generator interconnection tie line emanating from APS's Adobe Substation to the Point of Interconnection, the installation and testing of the System Protection facilities and the addition of a bi-directional meter at the Customer's interconnection point.

APS shall design, construct, install, operate and maintain the facilities required from APS-owned Adobe Substation to the Point of Interconnection. Customer shall be responsible for the total actual cost, plus any income tax or other tax effect, for such facilities.

DIRECT ASSIGNMENT CHARGE – The proposed Project would be interconnected to the APS distribution system (defined by APS as less than 69 kV) and will be engaging in wholesale energy sales beyond the APS transmission system. Therefore this Project is a FERC jurisdictional small generator interconnection. As such, the Customer shall be responsible for a monthly Direct Assignment Charge (DAC) that covers the costs of Operations and Maintenance of the dedicated generator tie line and its associated equipment, including a load ratio share of the existing Adobe 69/12 kV transformers (such ratio based on maximum Project output and the installed total transformer capacity at the utilized substation). This DAC is derived utilizing an APS standard methodology and is estimated during this study phase of the Project. After construction of the required dedicated generator tie line, the DAC will be identified and charged monthly to the Customer based on the actual costs of construction. The actual-cost-based DAC will be a fixed monthly charge for the life of the FERC Interconnection Agreement beginning on the In-Service Date. The estimated DAC is \$2,302.44 per month and is subject to revision and final update after the actual construction is complete and final invoicing for construction has taken place. This DAC may be adjusted in the future should there be a significant change in the transformer equipment at Adobe substation. Replacement of failed equipment, at actual cost, is at Customer's expense.

Estimated cost to Engineer, Procure and Construct (EPC) said work is \$699,126.52 (see Attachment C). If Customer is unable to certify that the Project is a Qualifying Facility, an income tax gross-up will be required, the

total estimated cost including income tax gross up is \$915,855.74. A FERC Small Generator Interconnection Agreement (SGIA) and separate Operating Agreement (an APS contact individual will be provided to Customer shortly) shall be signed between APS and the Customer, and adequate advance funding to cover the total estimated costs or adequate financial security agreeable to APS (SGIA Section 6.3) shall be submitted before the EPC process is initiated.

Should the Customer wish to utilize a financial security instrument (i.e.: Irrevocable Letter of Credit) rather than tender full up-front funding of the total estimated cost of EPC, the Customer must submit their offered instrument to Dan Sarti, APS Risk Manager at Daniel.Sarti@aps.com for review and approval with a copy to Bryan Hammond at Bryan.Hammond@aps.com. We encourage the Customer to proceed as early as possible in this process if that is their desire. It is noted here that up-front 100% funding by the Customer is the easiest and most certain process for APS to provide the quickest In-Service Date possible.

JOINT USE POLES INFORMATION

Customer requested information regarding the possible “joint-use” of APS poles for the benefit of possibly reducing their Project’s communication’s cost. The following information pertains to APS poles only. (APS cannot speak to the cost or availability of the use of poles on the landfill property as these are owned by others.)

1. There will be a \$500.00 APS Administration Fee (1 time only).
2. Customer would need to include APS on their insurance in case of damage to APS facilities when the communication cable is installed or maintained.
3. Customer would need to sign an Attachment Agreement (this will be a separate agreement from the FERC Interconnection Agreement or Operating Agreement).
4. Should the number of attachment points be less than 10, the annual APS fee would be \$15.54 per pole per year and be a separate individual billing.
5. Customer would need to call (APS) Colin Barleycorn at (602) 250-3320 to discuss the Agreement and insurance requirements directly. This needs to be done in advance of APS completing the electric design.

(ix) APS’s good faith estimate for completion of all regulatory and siting hearings and rights-of-way acquisition

City of Phoenix and Maricopa County permits may be required for this work. The proposed APS-owned generator interconnection tie line is expected to be

installed in a dedicated easement within the City of Phoenix Skunk Creek Landfill.

(x) A good faith estimate of the lead-time needed to order the equipment and construct the facilities in order to meet the in-service date of the Customer's small Generating Facility

Total time to design, order materials and construction is estimated to take 40-45 weeks and is directly impacted depending on the date that the required Customer funding is received at APS. The final design is to commence upon execution of the SGIA, including Customer's up-front funding of the total estimated costs for EPC or successful financial security arrangement with APS per the SGIA (acceptable to APS) and separate Operating Agreement. The financial security details are available in the SGIA boilerplate within the APS Tariff located for download at:

http://www.oatiaoasis.com/AZPS/AZPSdocs/APSOATT_master_080826.pdf

See Article 6.3 in the blank SGIA which starts on approximately "original sheet 450" of the downloaded Tariff. (See upper right page corner of the Tariff for Original Sheet number.)

(xi) Additional comments

APS requires the following information from the Customer to complete a detailed review of the proposed facility. Much, if not all of this information has already been provided to APS, so that the facilities final design and costs can be finalized and the information referenced in the Interconnection and Operating Agreement.

Protective Devices and settings

(To be coordinated with the APS Protective Relay Department as an on-going process as work proceeds with the interconnection.)

Manufacturer's Name for each Protective Device

Manufacturer's Reference Number for each Protective Device

Range of Available Settings for each Protective Device

Proposed Settings (trip setpoint and time) for each Protective Device

Ratios of associated current transformer. If multi-ratio, state the available ratios and which ratio will be used

Testing Company:

Provide the name of the company that will do the protective relay bench testing, the trip circuit functional tests and provide the anticipated start up date. (It is currently understood by APS that Exponential Engineering will provide the Customer with these services.)

Point of Contact:

If the interconnection and start-up process is to be coordinated through a party or individual other than the Customer, provide the name, company, address and phone number of that individual or party with whom the utility is to coordinate the interconnection. (It is currently understood by

APS that Exponential Engineering will provide the Customer with these services.)

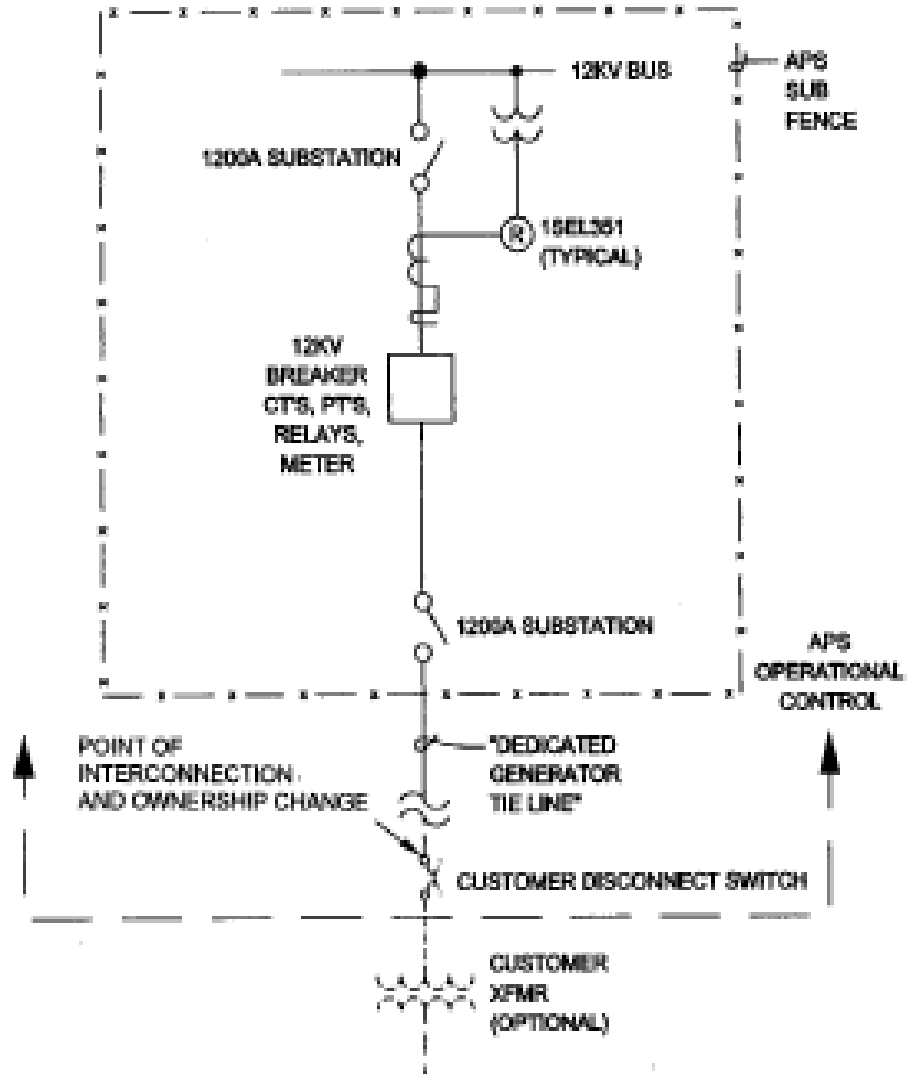
The proposed Customer protective relaying will need to be shown in detail and include all activated functions.

- Visible open utility disconnect needs to be moved to Customer's side of utility meter.
- Normal available three-phase fault current at the Customer's metering point will be 8792.2 Amps at 12.47kV and X/R ratio will be 22.05. Equipment should be braced for a maximum of 26,000 Amps at 12.47kV. (Please note: APS believes that the Customer's presented 25kA rated equipment should suffice, but wishes to work with the Customer to confirm this. The Customer is to contact Ron Onate directly to discuss this requirement.)
- It will also be necessary for the Customer and APS to establish an Operating Agreement so that either party may obtain a third-party operating electrical clearance from the other and so that APS can access APS-owned equipment in facilities not owned by APS.
- Furthermore, since this project will be interconnected to the APS distribution system, the interconnection requirements specified in the APS IRDG manual will also apply, in addition to the project-specific requirements outlined in this Study.

Attachment A

ONE LINE DIAGRAM

APS Adobe Substation – Project Termination



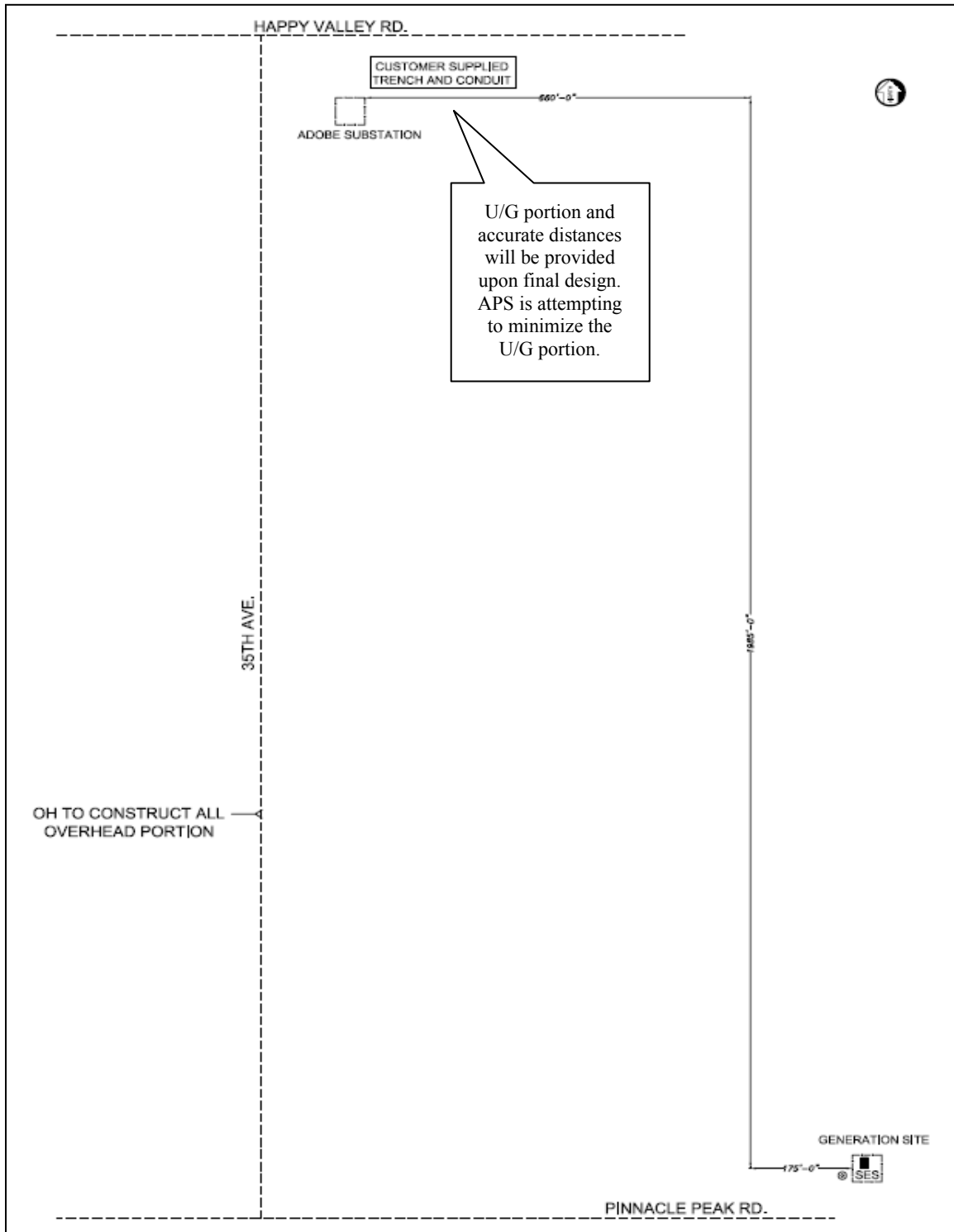
NOTES:

- ADDITIONAL RELAYS WILL BE REQUIRED AT CUSTOMER'S GENERATING FACILITY
- AN RTU WILL BE REQUIRED AT CUSTOMER'S SITE TO REPORT:
 - BREAKER STATUS
 - KW
 - KVAR
 - VOLTS
 - KWHR

- APS OWNED FACILITIES
- CUSTOMER OWNED FACILITIES
- APS OPERATIONAL CONTROL / JURISDICTION
- x - - - APS - SPECIFIED FENCE

Attachment B

GENERAL LOCATION DIAGRAM



Attachment C

Skunk Creek Landfill Interconnection Costs

	Distance (ft)	Total
Electrical	Approximately 4,400	\$ 336,631.68
Facilities		\$ 0
Substation		\$ 183,658.75
Communications		\$ 62,315.00
20 % Contingency (not applied to trenching and conduit)		\$ 116,521.09
Subtotal		\$ 699,126.52
Tax Gross Up 31%		\$ 216,729.22
Grand Total		\$ 915,855.74
Please Note: As stated in the report, if the Customer desires to have APS to provide the required Trenching and Conduit, the Subtotal would be as follows, plus any necessary Tax Gross Up as required.		\$ 717,990.52

The above table represents the estimated cost of facilities including tax gross-up. The Customer will be responsible for paying all actual charges.