Utility Relations for Onsite Power – What You Need to Know

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We design, build and maintain on-site power systems for industrial, commercial, and government customers worldwide.

- EPC contractor and system integrator
- 30 years of experience in on-site power
- 900 systems installed in over 50 countries
- 200 employees: 50% with engineering degrees
- VT headquarters with field offices in LA, San Francisco, New York, Houston
- ISO 9001:2000 Certified
Utility Interaction

Key Points of Interaction with Utilities:

• Interconnection (*Electric, Gas, Steam*)
• Standby / Backup Tariffs
• Data Gathering
• Utility as a Customer
Approach

**What Works:**
- Treat Utility as a Partner
- Technical Competence
- Get to the “Right People” ASAP
- Political Pressure (*Careful!*)

**What Doesn’t Work:**
- Confrontation
- Excessive Political Pressure
- Incompetence
Utility Interconnect Hurdles

- Lack of a Well-Defined Interconnection Standard
- Lack of Adherence to Interconnect Standard
- Lack of Integration
- Last Minute Surprises
Interconnection Process —
Basic Protection Requirements

Visible Break Disconnect
Automatic Lockout
Anti-Islanding
Reverse Power Flow
Primary Fault Detection  (Line—Line and Line—Ground)
Frequency and Voltage Protection
Out of Synchronism Protection
Power Quality Preservation  (Harmonics and Flicker)
Fault Current Contribution Below Acceptable Limits
Utility Distribution is Either Radial or Networked:

**Radial System**
Lines Extend Radially from a Common Substation

**Networked System**
Numerous Separate Lines Form a Grid
  - Area
  - Spot
Interconnection Specifics — Generator Type

Generator Type:

- Inverter-Based Systems
  Typically the Easiest to Interconnect
- Induction Generators
  Next Easiest to Interconnect
- Synchronous Generators are the
  Most Difficult to Interconnect
On-Site Generation Utility Concerns

• Asynchronous Generator Reclosure
• Nuisance Tripping of Network Protector Relays
• Unintended Islanding
• Backfeeding During Normal Operation
• Backfeeding on a Dead Line
Addressing Utility Concerns

• Asynchronous Reclosure
• Network Protector Over-Cycling
• Unintended Islanding
• Backfeed
Utility Standby Tariffs

- Ratchet
- Negotiable for “x” capacity
- Invest in cheap backup
- Determine critical load shedding
- Utility as a partner
Utility Data Gathering

- Interval Data
- Knowledge of all Tariffs
- Data evaluation
- Utility as a partner
Utility as a Customer

On-Site Generation Utility Benefits

- Reduced Loads on Congested Networks
- Can Forestall Costly Upgrades
- Improved Network Reliability
MEETING THE
PURE POWER DEMANDS
OF THE
NEW ENERGY MARKETPLACE