

# High Tide Technologies, LLC

Advances In  
Telemetry-  
Satellite Telemetry



# COMPANY INTRODUCTION

- High Tide Technologies, LLC
- Satellite SCADA Provider
  - Easy to Install Hardware
  - Web-based Software
  - Satellite Communications
  - 24x7 Customer Service
- [www.hightidetechnologies.com](http://www.hightidetechnologies.com)

# Product Distribution

- In Ohio
- Contact Pump Pros
- (513) 860-9771
- Doug Billiter
- [www.pumppros.com](http://www.pumppros.com)
- [www.hightidetechnologies.com](http://www.hightidetechnologies.com)

# TELEMETRY BASICS

- INTEGRATED SYSTEMS
  - HARDWARE
  - SOFTWARE
  - COMMUNICATIONS
  - MAINTENANCE
- LIFE CYCLE COST
- PLANNED OBSOLESCENCE

# COST CONSIDERATIONS



# Costing Example

- UTILITY HAS
  - WATER TREATMENT PLANT
  - 47 PUMP STATIONS AND TANKS
  - SEWER TREATMENT PLANT
  - 133 SEWER PUMP STATIONS
  - HILLY TERRAIN
  - COST ALTERNATIVES

# EXAMPLE RADIO COSTS

- $WTP = \$100,000$
- $SSTP = \$100,000$
- $WPS \ \& \ TANKS = 47 \times \$15,000 = \$705,000$
- $SSPS = 133 \times \$15,000 = \$1,995,000$
- $TOTAL \ COST = \$2,900,000.00$

# EX. SATELLITE COST

- $WTP = \$100,000$
- $SSTP = \$100,000$
- $WPS \ \& \ TANKS = 47 \times \$5,000 = \$235,000$
- $SSPS = 133 \times \$3,200 = \$425,600$
  
- $TOTAL \ COST = \$860,600.00$
- $ANNUAL \ COMM \ COST = \$68,100.00$

# LIFE COSTS-

## PRESENT WORTH I=6%, 20 YR

- RADIO = \$2,900,000
- SATELLITE=\$1,641,707
- DIFFERENCE= \$1,258,293

# LIFE CYCLE COSTS

## FUTURE WORTH $i=6\%$ , 20 YR

- RADIO= \$9,309,000
- SATELLITE= \$5,267,925
- DIFFERENCE= \$4,041,075

# TELEMETRY BASICS

- ALARM SYSTEMS
  - TELEPHONE
- ALARM AND MONITORING SYSTEMS
  - CELLULAR
  - SATELLITE
- ALARM, MONITORING AND CONTROL SYSTEMS
  - RADIO
  - SATELLITE

# HARDWARE

- TELEPHONE AND CELLULAR
  - PRE-PACKAGED UNITS
  - DAMAGED COMPONENTS REQUIRE NEW UNIT
- SATELLITE AND RADIO
  - COMPONENTS DIN-RAIL MOUNTED
  - EASY REPLACEMENT
  - SOME RADIO SYSTEMS HAVE INTEGRATED CIRCUIT BOARDS THAT CAN GO OBSOLETE, AVOID THEM.
  - SATELLITE UNITS HAVE STANDARD COMPONENTS
  - RADIO SYSTEM HARDWARE IS USUALLY CUSTOMED DESIGNED AND PROGRAMMED FOR EACH APPLICATION.
  - RADIO SYSTEMS REQUIRE ADDITIONAL INFRASTRUCTURE FOR ANTENNAS AT EACH LOCATION

# HARDWARE



# SOFTWARE

- TELEPHONE SYSTEMS – NO SOFTWARE
- SATELLITE AND CELLULAR- WEB BASED, GRAPHICAL, HISTORY INFO AND GRAPHS, TEXT ALARMS
- RADIO- REQUIRES A CONTROL PC
  - REQUIRES ADDITIONAL SOFTWARE FOR REMOTE VIEWING
  - ALARMS LOCALLY AT THE CONTROL PC
  - REQUIRES ADDITIONAL HARDWARE/SOFTWARE SEND REMOTE ALARMS WHEN UNMANNED
  - SUBJECT TO PLANNED OBSOLESENC

# SOFTWARE

- [www.httscada.com/pickenscoga/](http://www.httscada.com/pickenscoga/)
  - Pickens County, GA
- [www.httscada.com/leecoga/](http://www.httscada.com/leecoga/)
  - Lee County, GA
- [www.httscada.com/buonavistaga/](http://www.httscada.com/buonavistaga/)
  - Buena Vista, GA

# COMMUNICATIONS

- Radio – Utility owns all the infrastructure
  - Maintains it.
- Telephone, Cellular, Satellite Systems
  - Utility owns a portion of the infrastructure-hardware
  - Rents the remainder, maintenance performed by the service provider
  - Pay communications and service monthly or annually

# Telephone

- Infrastructure Costs
  - Pay for line extensions
  - Pay rent on the use and maintenance
  - Recurring Costs
- Monopolies Historically Provide Poor Service to Remote Areas
  - Unfortunately that's where most of your facilities are located.
- Modems subject to power surges
- Common Problem- Phone company giving your wire pair to another user
- Alarm type systems dominate

# Radio

- License and Unlicensed Systems
  - Spread Spectrum
  - Microwave
- Requires additional engineering
  - Radio surveys
  - Land for towers and repeaters
- Maintenance Costs can be high
- Licensed systems require bi-annual renewal.

# Cellular Systems

- Coverage Issues-Dead Spots
  - System Population Based
  - Different Protocols=CDMA (Verizon), GSM (AT&T, T-Mobile), PCS (Sprint/Nextel)
- Analog was phased out in 2007, Verizon switching to GSM in 2010. Require hardware upgrades.
- “One Way Systems” – No remote control
- Report and Alarm Type Systems
- Recurring Monthly Charge
- Business Model is voice not data
- Question, “If the cell company loses a tower, who is going to notify me?”

# Satellite Communications

- Public Access Systems began in the early 90's
- 64 public access systems available
- Voice, data, television, GPS, weather, etc.
- Geo-stationary (moves at the speed of Earth's Orbit) – Must Align an Antenna
- Low Earth Orbit systems (Orbit Faster than Earth) No antenna alignment
- HTT utilizes the Orbcomm Low Earth Orbit Network

# SATELLITE SYSTEM

- ORBCOMM Satellite Network
  - [www.orbcomm.com](http://www.orbcomm.com)
  - Twenty-nine satellites
    - Each One Orbits every hour and one-half
    - Each One can see a 3000 mile diameter on the earth.
    - Seven New Satellites in 2009
    - Eighteen New Satellites in 2010 to 2012
  - Four Ground Stations in U.S.
    - Connected to the Internet
  - System is monitored 24x7

# SATELLITE

- Event Based Communications
  - Pump Start/Stop Commands, Valve Open/Close Commands, All Alarms. Sent Immediately
- Data Trending-
  - Meters-totalized flow plus 24 hr. profiles sent once per day
  - Tank level and Flow Rates- Readings sent every one and half hours, system updates upon all alarm thresholds.
- Demand Readings at any time
- Custom Profiles- Call us

# MAINTENANCE CONSIDERATIONS

- ALL OF THESE SYSTEMS REQUIRE MAINTENANCE
- KNOW WHO WILL REPAIR EACH COMPONENT.
- KNOW YOUR COSTS AHEAD OF TIME
- THIS CAN BE THE MOST COSTLY OF ALL THE COMPONENTS.
- GOOD RULE OF THUMB “ALWAYS BUY YOUR SYSTEMS FROM THOSE WHO ALSO HAVE A GOOD HISTORY OF MAINTAINING THEM!”

# Telemetry Considerations

- Life Cycle Cost
  - Capital, Recurring, Maintenance
  - 10 to 15 year life cycle
  - Planned Obsolescence
- Type of Communication System
  - Owned (radio) vs. Leased (Sat, Cell, Phone)
  - Communication Provider's Business Model
    - Service History
  - Communication Coverage in your area
- Long Term Maintenance
  - Sales Company's Business Model
  - Do they service what they sell?
  - Where will the service originate?

# Questions and Answers

- [www.hightidetechnologies.com](http://www.hightidetechnologies.com)



# PRODUCT ADVANTAGES

- True “two way system”
- No Towers, Repeaters, Radio Surveys, or Associated Costs
- System can be Installed “One Location at Time”
- A/C or Solar Powered Hardware
- No FCC Licenses Required by Customer
- Customer Only Requires Internet Access
- Ongoing Support for the Life of the Contract

# PRODUCT ADVANTAGES

- No Coverage Issues similar to cell phones
- Satellite Company's primary business is data communications
- Customizable
- Hardware and Software Designed against Electronic Planned Obsolescence
- Replacement Parts Shipped Over Night for Rapid Replacement-Damaged Units generally back on-line in 24 hours.