What is "the grid?" Who pays and what do members get?

OPALCO's grid, or "grid control backbone" as it's also referred to, is the network of infrastructure and devices that monitor and control our electric distribution system. The same grid also provides the backbone for Internet services that Opalco provides at a cost to Rock Island Communications. Grid control describes how we manage the electric (and fiber) grid as well as the two-way communications needed in this digital age.

We all benefit from the grid as its efficiencies keep operational costs down and its dynamic capabilities give us the power to better control our system and prepare us for the future.

Who pays for the grid, or more importantly, grid expansion? All Co-op members pay for the improvements in the grid to serve our electrical distribution system as we do for all infrastructure owned by the Co-op. The current cost per member for infrastructure is about $30/year, which covers poles, and the power lines, fiber optic cables, and communications equipment along the way.

We provide interconnections for Internet on pay-to-connect basis. Anyone who makes use of our grid for Internet services pays for 1) access to the grid, 2) connection from the grid to their home or business and 3) monthly subscription fees as revenue to Rock Island Communications.

OPALCO's current construction work plan includes $7.5 million for grid expansion and development over the next seven years. Are there other ways to manage the costs of our grid control system? There may well be less costly ways, although none give us the full benefit of our modern grid and its three essential service goals. Our grid lets us

1) Meet electrical system requirements through

- Around-the clock remote monitoring and control of 26 submarine cables
- Monitoring 1,339 miles of power lines (95% underground) over 20 islands
- Managing hundreds of field devices (switches, voltage regulators, meters, interconnected renewable generators, and more)
- Providing Crew communications and safety in the field
- Networking three Co-op offices together

2) Improve public safety with

- Field communications for all first responders
- Coordination of emergency services providers
- Connection to physicians, hospitals and mainland resources during an emergency

3) Provide access to Internet services by offering a modern quality of life through connectivity that

- Supports economic development
- Improves educational opportunities
- Increases property values.

Utilities across the nation are scrambling to create a more secure and dynamic grid. The Opalco board had the foresight to go with fiber-optic technology in 1999 that has given us a head start on modernizing our grid. We have steadily grown and expanded our grid since our system was first built in the 1930s and '40s to meet the needs of additional members, new standards for system monitoring and control (SCADA) and the evolution of technology.

This fiber optic backbone also allows us to integrate local solar power, electric vehicles and connect and manage the thousands of smart homes and devices that will be standard in the near future. We are readying our Co-op for a future that we can already see. And, the expansion of the grid pays for itself. The efficiencies and capacity we gain offset the expense. Every step of the way, our grid control system keeps operational costs down and enhances the sustainability of our community for future generations.

The Evolution of the Grid	
Current Energy Grid (analog)	**Modern Grid-Controlled System (digital)**
Radial system	Integrated and networked system
One-way communications	Two-way communications
One-way energy flow	Two-way energy flow including interconnected member-generated power
Centralized generation	Mix of central and distributed generation
Passive system control	Active system control
Minimal member-consumer engagement	Member interconnected generation (solar, wind)
Transmission & Distribution separated	Interactive Transmission & Distribution

The current energy grid was developed in the 1950s with the main objective to keep the lights on. Over the next 50 years, telecommunications and digital networks took on a bigger role and began to move away from analog designs. We're now in the era of a digital makeover with the world shifting from a petroleum economy to an electric economy. A modern, digitized grid will support sustainability and quality of life by connecting more renewable energy, providing an infrastructure for electric vehicles, enable advanced technologies and greater efficiencies.