

Retail competition in the U.S. electricity industry

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Introduction

Today's increasingly competitive global marketplace requires change in the way the nation's electric power industry is planned and operated. New markets and technologies have rendered obsolete an industry structure that was developed in the nineteenth century. That structure met the needs of consumers and the economy for which it was designed: the promotion of universal electrical service and the exploitation of the scale economies in generation technologies. Those circumstances no longer prevail. It is time for the industry to take the next step in its evolution to better meet the challenges of the twenty-first century. The new industry form must foster greater economic growth balanced with adequate environmental protection; enhance the competitiveness of the nation's business and industry; and increase new business opportunities. To achieve these objectives, the nation must place greater reliance on competitive -- not regulatory -- mechanisms to develop, market, and deliver electricity products and services throughout the United States and North America.

In the Energy Policy Act of 1992 (EPAct), Congress set forth a long-term, comprehensive mandate to restructure the nation's electric power industry. That mandate already has greatly changed the expectations of major stakeholders, and states have begun to take bold new initiatives to advance the necessary reforms. For example, the California Public Utilities Commission (CPUC) has proposed the restructuring of that state's electric services industry and the reform of its complex regulatory apparatus (CPUC 1994). Among the reasons stated by the CPUC in defense of its action were:

- Electricity rates are too high. This distressing fact prompts the need to explore reasonable alternatives to the current regulatory and industry framework. The objective should be to establish a new framework that does a considerably better job of exerting downward pressure on rates consumers pay for electric services.
- Command-and-control regulation and government central planning are fundamentally at odds with, and ill-suited to, the increasingly competitive electric services industry.
- Market forces and the promotion of competition are appropriate mechanisms for solving regulatory problems.

California's bold initiative (See pages 74-75.) has captured the imagination of large industrial consumers and other stakeholders that advocate greater competition in the industry. This paper describes the vision of large industrial electricity consumers for restructuring the electric utility industry to achieve the goals established by the CPUC.

Competitive electricity markets

American business and industry increasingly compete in global markets. The nation is in a profound economic transition to adapt to global competition. If U.S. business and industry are to

compete effectively in domestic and international markets, the prices of all the goods and services needed to manufacture products must be competitively priced. Private firms procure their raw materials and semi-finished goods in competitive markets, but electricity services provided by electric utilities cannot now be procured on a competitive basis.

The current electric industry structure has given vertically integrated utilities tremendous market power. Elimination of this market entry barrier is an essential condition for wholesale competition as envisioned by the EPAct. Utilities' market power is derived from their joint ownership of generation, transmission, distribution and system control (or dispatch) centers. This has resulted in a generally inefficient industry -- exceptions notwithstanding. Retail rates often greatly exceed the cost of new generation. Wide rate disparities exist within most states and within all regions. The resultant bill impacts are a debilitating burden on domestic business, industry and residential consumers.

The inefficiencies inherent to the current industry structure can be removed by substituting competition for much of the current regulatory apparatus. Greater competition in the industry can be facilitated by the physical nature of the product. The commodity that would be traded in competitive power markets -- electricity -- is more homogeneous and standardized than many other tradable commodities. This homogeneity is necessary from a technical standpoint because power flows cannot easily be restricted. A nonstandard product could disrupt the interconnected grid resulting in power outages (Blackmon 1985).

Competition in the U.S. electricity industry -- particularly retail competition -- will benefit all end users by: (a) providing a broader range of products and services with greater value at competitive prices, and (b) creating new business opportunities throughout the economy, with the potential for new jobs and income growth.

Legal and policy impediments to competition

Laws, regulations and governing practices that evolved to serve different market conditions, technologies, and social environments must be changed to meet new circumstances. Competition is colliding with the regulated monopoly framework, which was conceived in the nineteenth century to address conditions that no longer prevail.

The traditional regulatory compact generally gave utilities: (a) franchised monopoly rights, (b) an obligation to serve, and (c) the opportunity to earn a fair rate of return on prudent investment. The vestiges of the existing regulatory regime should be changed to promote more competitive power markets. Exclusive franchise laws should be amended, as appropriate, to exempt from regulation independent providers (including brokers and marketers) of generation and of other electricity services who seek to market their products and services to retail consumers. In a truly competitive industry, retail consumers do not need to be captive to a regulated utility's obligation to serve. The profit earned by any supplier in a competitive market should be determined by that firm's ability to innovate and to control costs -- not by a complex, often unwieldy, regulatory process. It is imperative that stakeholders and lawmakers immediately act to remove these obstacles to competition. There are no technical impediments to the creation of more competitive power markets (U.S. Office of Technology Assessment 1989).

Lawmakers and regulators should also reexamine the appropriateness of statutory and regulatory mandates that force regulated utilities to act as the principal agent for certain social programs. Utilities have been required to heavily subsidize the energy efficiency improvements of some end users at the expense of others. Thus, among industrial class end users, firms with the foresight to invest in energy efficiency improvements at their own expense are forced to subsidize the investments of their competitors. Such programs result in inefficient price signals that can create greater social and economic distortions than the ones targeted for correction in the first place. Clearly any program that attempts to reap broad social benefits for all citizens should rightfully be funded by all citizens, i.e., by appropriations from federal or state general funds.

Retail access to the electricity marketplace

The vertically integrated utility structure consists of the generation, transmission, distribution, and coordination and system control functions. The industry exists to provide retail services to ultimate consumers. Since enactment of the EPAct, few dispute either that generation is no longer a natural monopoly or that certain transmission and distribution functions must remain natural monopolies. [Table 1](#) lists both the traditional electricity suppliers and the new competitors that are emerging under competitive supply. The debate now has shifted to the question: Is retail service a natural monopoly? But the term “retail service” is too broad in this context. The provision of retail service should be separated into: (a) the use of distribution facilities that are natural monopolies, and (b) end-user products and services that are not natural monopolies. [Table 2](#) summarizes how the components of electric service should be supplied in competitive markets.

Distribution facilities, such as the wires, some transformers, some substations, and the control centers, are natural monopolies that should remain under rate regulation and be planned accordingly. Access to this infrastructure should be provided on a common carrier basis to any market entrant. There probably will not be one model for the way the retail grid and control centers are institutionalized. Different regional or local market structures will naturally evolve to meet regional or local needs, because the United States is a very large and diverse country. Government or regulatory bodies should not attempt to “design” or “manage” these markets beyond assuring nondiscriminatory access to all potential market entrants. Such actions would only hinder the efficient development of the appropriate market structures that can fully meet the needs of every buyer and seller in the marketplace.

Retail competition requires that any competing supplier or marketer have access to the distribution facilities on a nondiscriminatory basis in order to market their products and services to ultimate consumers. Retail suppliers (e.g., power marketers, brokers, energy service companies, or other utilities) will package unbundled products and services acquired in wholesale markets to meet the demands of ultimate consumers in the retail market. Where retail competition exists, consumers will vote with their dollars to decide which kinds of generation, DSM or other resource options are used. In these new markets, electricity is traded as a commodity; not as a regulated monopoly service.

System control and the coordination of the wholesale and retail grids, i.e., the need to instantaneously balance supply and demand over a specific geographical area, is a natural monopoly. New institutions should evolve to perform these tasks on a cost-of service basis.

These institutions must be independent from the owners of generation assets. By analogy, all airlines are subject to the independent control of air traffic controllers, and an airport generally needs only one control tower to provide services that benefit all users on a nondiscriminatory basis. At the bulk power level, such entities might be regional transmission groups (RTGs) that provide coordination and system control functions to a regional power market. RTGs also may have the additional responsibility of planning the high-voltage network.

There is no question that competitive procurement practices for some of a traditional utility's customer requirements would help utilities lower their costs. However, real efficiencies cannot be achieved unless the traditional utility supplier also confronts retail competition. This is the threshold issue. The planning process will significantly improve once suppliers and regulators know that ultimate customers can choose their source of power. The suppliers of generation services, including ancillary services such as voltage support, will make every effort to build only those plants that actually are needed and at costs that customers are willing to pay. Owners of those plants also will bear the risk associated with the technologies they own and operate, including future changes in environmental laws.

The need for rate regulation will continue to the extent that natural monopolies exist. However, many utility functions that are now regulated, e.g., generation, ancillary services, generation planning, and DSM, are not natural monopolies. These functions do not need to be regulated and, therefore, a strong argument can be made for spinning off those assets or programs and for letting them be provided in unregulated, competitive markets. While the need for regulation will decline, the role of antitrust laws for providing consumer protection should increase in importance. The guiding principle should be to maximize the development of competitive markets and to reduce the need for burdensome and inefficient regulation.

This model for a competitive electricity market will benefit all, not just a few, customers. There are no technical or conceptual impediments that would preclude participation in competitive markets by small end users. While simple in concept, competition is far from easy to implement. Nonetheless, the need for more efficient power markets is vital, because economic pressure will require productivity improvements in all sectors of the economy.

Common-carrier operation of transmission and distribution facilities Electricity -- like all other forms of energy -- is a commodity and should be marketed and planned like any other commodity. A commodity market for electricity cannot be established unless access to essential facilities is provided on a common-carrier basis to all market entrants. These services -- which are natural monopolies and therefore subject to vigilant regulatory oversight -- are transmission, distribution, and coordination and system control services. A truly competitive power market can evolve once these services are provided on a nondiscriminatory basis at rates based on the actual cost of service. A necessary requirement of competitive power markets is the need to separate the ownership of essential facilities from the use of the facilities. Any market entrant -- buyer, seller or trader -- must be able to freely access the wholesale and retail markets if competition is to work. In essence, the transition from the existing regulatory regime to a competitive regime

replaces the utility's "obligation to serve" with an obligation to provide access to the market. The competitive power market should have the following characteristics:

- **Contracts.** Long-term bilateral contracts should be the primary mechanisms for sending long-term price signals between buyers and sellers. Contracts assure buyers that the services they purchase meet their specific needs in terms of adequacy, reliability and price. Contracts give the buyer cost control, and give suppliers the security needed to finance their projects.
- **Spot Market** - A short-term electricity spot market is needed to assure long-run competition. The spot market serves several purposes. First, the spot market makes the contract market operate efficiently by providing a financial mechanism for reconciling differences in supply and demand in individual contracts. The spot market supplies and sets prices for replacement power for any generator that cannot fulfill its contractual obligations. Second, the spot market facilitates transactions that are not well suited to contractual arrangements, such as short-term supply. For example, end users can purchase power above contract levels, and generators can sell power that is available above their contract commitments. Third, the spot market provides the market signals for the need to build new capacity. Finally, the spot market allows the creation of secondary markets, such as futures trading. Futures trading creates price stability by shifting the risk of uncertain prices from those who are least willing to bear risk to those who are least concerned about price uncertainty.
- **Market clearinghouse.** Centralized market clearing processes -- analogous to those used in many commodity and financial exchanges -- should be used to collect offers to buy and sell at various prices, determine market clearing prices, give delivery instructions to the sellers whose offers have been accepted, and settle payments among the traders. The central dispatch, pooling and economy trading processes must be integrated with this market clearing function.
- **Capacity trading.** Users of transmission and distribution (T&D) networks should be able to own or reserve rights to the capacity on those facilities. Those users should be allowed to reassign or trade those rights to other users or traders. Capacity trading will help maximize the efficient utilization of the transmission and distribution networks. The unbundling of T&D services and the creation of comparable rates and terms and conditions for service will enable transmission and distribution capacity holders to compete with each other, and with the utility, for buyers (and other traders) of these services. The introduction of capacity sellers to the T&D market will result in more competitive pricing for these services and the repackaging of capacity rights (including "rebundled" services) to meet the demands of the market.

[Table 3](#) compares the planning and contracting processes under traditional utility regulation and under competitive electricity supply.

The pricing of monopoly services

A competitive electricity market cannot be established unless all products and services offered in that market, or necessary to make the market work, are appropriately priced. Products and services offered in competitive markets are priced in those markets and sold for a profit. Firms that supply products in competitive markets will be price takers, so the profit they earn will be in

direct proportion to their abilities to innovate and to control costs. Similarly, the services of facilities that are natural monopolies should be priced on the basis of cost of service. Owners of those facilities should be allowed the opportunity to earn a fair rate of return on only actual costs prudently incurred. Efficient pricing of these regulated services requires that rates be comparable and fully unbundled.

Pricing comparability should be instituted for all transmission and distribution services, i.e., the owners and operators of T&D facilities must price the use of those facilities by third parties on the same basis as they would charge themselves. Only absolute pricing comparability will avoid the potential for price discrimination (and cross-subsidization) between different buyers and sellers. All suppliers of generation, transmission, and distribution services must offer those services on a fully unbundled basis. Pricing comparability cannot be achieved without adequate unbundling of costs and services. Unbundling will allow new services to develop that cannot be anticipated and encourage new market entrants. Users should be able to procure both repackaged “bundled” and unbundled services that meet their total power and service requirements.

Unbundling each service and its cost will provide consumers with the necessary information to evaluate alternate suppliers. Unbundling is essential if consumers are to be given accurate price signals. It also promotes greater competition by allowing direct competition among a greater diversity of products and services. Unbundling the costs of each service will also help prevent the subsidization of some customers by others and thus mitigate the potential for uneconomic bypass during the transition period to full competition.

Resource planning in the marketplace

The planning function will not be compromised by competition; it will only be enhanced. The traditional command-and-control type of planning, which is the basis of the monopoly integrated resource planning (IRP) approach, aggregates system planning and market planning. It is a planning paradigm directed by a cumbersome regulatory process; it is not customer directed. This has produced two undesirable results: (a) inefficient generation has been built to the detriment of ratepayers, and (b) customers’ needs are being dictated by the regulatory process, not by what customers actually want. As a result, electricity rates are too high in most parts of the country.

Generation planning is not a natural monopoly. With retail competition, only the most efficient producers sell their product and increase their market shares. If a generator’s output cannot be sold, that risk is absorbed by the plant’s owners, not captive ratepayers. The least-cost resource mix will be determined in markets -- not in the highly litigious, adversarial environment of the regulators’ hearing rooms. The market share of each technology will be a market outcome, not a planning variable.

Since the market sets the price for each type of generation or ancillary service, there will be adequate incentive for firms to plan and supply those services. Owners of transmission and/or distribution facilities will continue to plan, and that planning will be more efficient because earning a fair return on the transmission assets that are used and useful will be the only way they make a profit. Energy service companies, power marketers, brokers and other entities will perform the market planning function. These firms will flourish once they are able to deal

directly with end users. They will package and bundle services that customers want. These services will be determined in the marketplace and not in a hearing room or by a “collaborative” process that often excludes the participation and views of ultimate consumers. Customers that want traditional basic service can seek a supplier to provide that service. But like the products and services offered in other markets, choice will decentralize decision-making and give customers direct influence over the development, delivery, consumption and price of electricity services.

Retail competition will no more endanger the efficient planning at the retail level than wholesale competition will harm planning at the wholesale level. The planner in a competitive business learns their customers’ needs and plans accordingly. That planner also will seek ways to modify customer demand in order to achieve a larger market share for their products and services. The firm will only achieve that goal if it can be innovative and control its costs -- and there is a demand for the product!

A summary

In competitive markets, customer choice will determine the market shares of competing technologies, not a command-and-control form of planning. Wholesale competition will allow utility planners (including municipal and cooperative systems) to source their power requirements from many different generators. Real competition will force all suppliers to choose and to offer only the most efficient, least-cost generation resources. The planning of transmission and distribution facilities -- which remain natural monopolies -- will be the focus of a top down regional process that includes regulatory oversight. But there will be no integration of the monopoly planning functions with market planning. All customers will have choices.

Epilogue: Transition costs

There is perhaps no issue more contentious or controversial than so-called “stranded” costs. Transition costs are the utilities’ sunk or “stranded” costs associated with the deregulation of the industry. In the case of the electric utility industry, these costs may include uneconomic generating assets, purchased power or fuel contracts, and certain regulatory assets. Regulatory assets are costs (or liabilities) of a utility whose full recovery from ratepayers has been deferred to a later date. For example, the costs of some power plants or power contracts are often “phased-in” to rates. The unrecovered amount is recorded on the utility’s books as a regulatory asset.

True transition costs may be a minor problem for many utilities, but a major concern for a few. All stranded costs are not transition costs. A strong argument can be made that only legitimate and verifiable transition costs are recoverable from a utility’s customers. The assets or deferred expenses of some utilities may have been “stranded” for reasons other than increased competition.

Transition costs cannot be dealt with on a generic basis. Certain legitimate and verifiable transition costs may need to be considered on a case-by-case basis. Generally, the disposition of potential transition costs will be a state concern because the states are the depositories of the legal records that originally authorized or adjudicated the investment or expense. The Federal Energy Regulatory Commission (FERC), for example, should not order recovery of transition

costs for any transaction involving a municipal entity or other political subdivision of a state. States have adequate authority to deal with these situations. Stranded costs associated with FERC-jurisdictional wholesale transactions should always be based on contract terms. It is FERC's responsibility to interpret those contracts. However, the Commission may not be able to presume anything in the absence of a contract. Customers migrating from full to partial requirements status or altering a traditional relationship with a utility supplier should not be subject to transition costs if the change was not foreclosed by contract or specific tariff provisions. Contracts or tariff provisions should address these costs on a prospective basis. State and federal regulatory authorities should avoid any action or policy that implies that the recovery of any "stranded" cost is an automatic entitlement. Regulatory authorities should apply consistent treatment to all assets currently in rate base which may deviate from a fair market value in a competitive industry.

Utilities that attempt to recover sunk costs must balance this short-term revenue gain -- which will raise rates -- with its long-term earnings potential in a more competitive industry. Thus, utility shareholders may be at greater risk if the recovery of sunk costs results in a reduced market share.

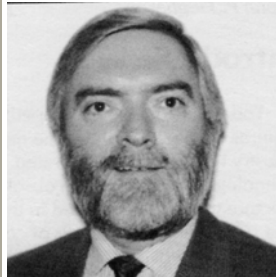
Utility shareholders made their investments forewarned of the possibility that regulatory rules can change and arguably may already have been compensated for the risk of such change. For example, utility shares typically have sold for a multiple of their book value (Stelzer 1994). That share holders put a higher economic value on the earnings potential of a utility's assets than the book value of depreciated investment may indicate higher earnings that compensate for these risks.

An affirmative obligation should be placed on any utility with potential transition costs to begin mitigating the customer impact of those costs. A utility that faces the prospect of transition costs should, first, find a market for those assets, and second -- when it cannot dispose of the assets in the marketplace -- write down the remaining asset value. If utilities are allowed to recover from current or former customers the difference between the book value of an asset and that asset's lower market value, then customers should receive payments equal to the appreciated value of any asset whose current book value is below market value.

Transition costs must not be a mechanism to preserve inefficient, preferential supplier relationships. These costs must not be a means to discriminate among competitors or to create entry/exit barriers. The recovery of transition costs by shifting costs to consumers -- rather than utility shareholders -- must not be allowed to distort either the manner in which utilities competitively procure their new generation requirements or transmission prices.

The Electricity Consumers Resource Council (ELCON) is a nonprofit association of large industrial consumers of electricity. ELCON was organized in 1976 to promote the development and adoption of coordinated and rational federal and state policies that assure an adequate, reliable and efficient electricity supply at competitive prices. ELCON member companies own and operate manufacturing and other facilities throughout the United States and in many foreign countries. ELCON member companies produce a wide range of products that are essential for sustaining robust state and national economies and for promoting and maintaining a high quality

of life. These products include: steel, chemicals, petroleum, motor vehicles, aluminum, industrial gases, machinery, glass, paper, food products, textiles, and electronics. The member companies of ELCON consume over 4 percent of all electricity in the United States. Many ELCON members co generate or generate some of their electricity requirements.



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In brief: The proposal to restructure California's electric services industry

The California Public Utilities Commission's goals:

Put downward pressure on electric prices for California's residential and business consumers.

Position California's investor-owned utilities to compete aggressively in what is an increasingly competitive electric services industry.

Reduce costly administrative burdens imposed on all parties by California's current regulatory structure.

Reform California's regulation to reflect and exploit the reality of increased competition in the electric services industry.

How does the CPUC's proposal achieve these goals:

- It allows competition to flourish where it already exists by providing consumers direct access to generation markets.
- Where monopoly power persists, it shifts regulatory focus away from line-item accounting toward performance standards.
- It ensures that the utility has the regulatory flexibility necessary to market products and services and to compete for market share.
- It ensures no utility service providers have a fair opportunity to compete in the direct access generation market.
- It ensures that consumers who choose to continue to receive service from the utility do not unfairly bear the costs of increased competition.

The CPUC's proposal:

Part One

Where competition exists, the CPUC replaces economic regulation with the discipline of the market.

- On January 1, 1996, consumers who currently receive service at the transmission level (50,000 kilovolts or greater) may voluntarily choose to purchase electricity from alternative providers of generation services. These "Direct Access" consumers may purchase from no utility power producers, utilities, and brokers, marketers, and other generation service providers.
- On January 1, 1997, consumers receiving service at the primary level may choose to become direct access consumers. Consumers receiving service at the secondary level may choose direct access by January 1, 1998. All commercial customers may choose direct access after January 1, 1999. All remaining consumers may choose generation services from alternative service providers after January 1, 2002.
- Investor-owned utilities continue to provide transmission and distribution service to direct access consumers in a non-discriminatory manner. Utility rates for these services will be based on performance.
- Any consumer may elect to continue to be a "Utility Service" customer and continue to receive service from the utility in the traditional manner at prices regulated by the Commission.

Part Two

Where competition does not exist, the Commission's proposal replaces traditional cost-of-service regulation with performance-based regulation.

- Performance-based regulation provides stronger incentives for efficient utility operation and investment since utility prices and earnings are based on utility performance judged against a series of benchmarks instead of on utility costs.
- The Commission is currently considering separate proposals for performance-based regulation initiated by the three investor owned utilities it regulates and the Commission's Division of Ratepayer Advocates. The Commission proposes to pursue

performance-based regulation through the utility programs currently under review. The Commission's approach recognizes the different characteristics of utilities and does not intend to impose a single type of regulation on California's investor-owned utilities.

- The proposals for performance-based regulation will provide utility investors with opportunities to earn returns that are, at a minimum, comparable to opportunities under cost-of-service regulation.
- Performance-based regulation offers utilities the opportunity to develop the skills and tools necessary to make the transition to an environment where consumers and market forces dominate.
- The Commission will not permit the shifting of costs from direct access consumers to the utility service customers. Direct access consumers continue to pay their share of costs from past, prudent utility investments rendered uneconomic in the transition to a competitive market.

What the CPUC's proposal does not do:

The proposal does not change the Commission's fundamental duty to protect consumers. The Commission will continue to ensure safe, reliable, reasonably priced and environmentally sound electric service.

The proposal does not sacrifice the utility's financial integrity or opportunity to earn.

The proposal does not allow cost-shifting among different consumer groups.

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Table 1
New Competitors for Electricity Supply

Traditional Electricity Suppliers:

- Investor-Owned Utilities
- Publicly-Owned Utilities:
 - Municipal Utilities
 - State Utilities
 - Power Districts
 - Joint-Action Agencies
 - Rural Cooperatives
 - Federal Power Agencies
- Qualifying Facilities (QFs)

New Market Entrants:

- Exempt Wholesale Generators
- Power Marketers
- Power Brokers
- Power Commodity Exchanges
- Energy Service Companies
- Entrepreneurs
- End Users

Table 2
Requirements of a Competitive Power Market

<i>Electricity Service</i>	<i>Provided By</i>
• Generation	• Any supplier of generation services should be able to sell direct to any buyer including power marketers and end users.
• Transmission	• Transmission owners should provide access on a common-carrier basis to all users of the interconnected bulk power grid.
• Coordination and System Control	• Coordination and system control services should be provided on a nondiscriminatory basis to support the efficient and reliable operation of an electricity spot market.
• Distribution	• Owners and operators of distribution facilities should provide access on a common-carrier basis to all users of the local distribution system. • Access to distribution facilities should be provided to any new market entrants such as brokers, power marketers, energy service companies, and other utilities. • All end users should have access to alternate suppliers of basic electricity services as well as products and services that promote energy efficiency.
• Demand Side Management (DSM)	• Any supplier of energy efficiency products should have access to any end user. • Competing suppliers should be able to bundle these products with electricity services.

Table 3
Contracting and Planning in Competitive Markets

<i>Regulated Utility Function</i> • Collect availability and cost data from each generating unit • Project future demands • Determine least-cost dispatch • Issue dispatch orders <i>Competitive Spot Market Analog</i> • Take sell offers • Take buy offers, including offers from customers to take less or to "sell back" if price is high enough • Clear the market • Delivery
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