A PRIMER ON RETAIL POWER PROCUREMENT

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ENERGY / FORWARD

CHAPTER 1

Overview

When electricity is purchased from a utility, the price covers many services, of which supply (i.e., generation) and delivery (i.e., high-voltage transmission and local distribution) are the largest parts. Supply costs 30 to 60% of the total electric bill, depending greatly on what a utility charges for delivery. For most of our history, a retail customer had to buy both services from the utility under regulated tariffs, i.e., rates set by governmental public utility commissions (PUCs) or, in Canada, other agencies described below.

Starting in the late '90s, several states and Canadian provinces began restructuring their utilities, allowing retail power customers to instead buy their electricity supply (but not delivery) from non-utility sources. The utility delivers that power through the same wires and meters as used to deliver its own power, at the same regulated delivery charge. This process is generally termed "deregulation". By 2009, 17 states, 2 Canadian provinces and the District of Columbia had opened their retail power supply markets to competitive retail power

procurement (see map at www.eia.gov/cneaf/electricity/page/restructuring/restructure_elect.html).

In many of those jurisdictions, dozens of alternative power suppliers now actively sell power to millions of end-use customers, of all types. An entire cottage industry of brokers, consultants, and aggregators (hereafter collectively called "specialists") has grown up around this option. From a practical standpoint, commercial customers that consume at least $100,000 a year of electricity (that's total annual electricity spend), are likely to get the most value out of this process.

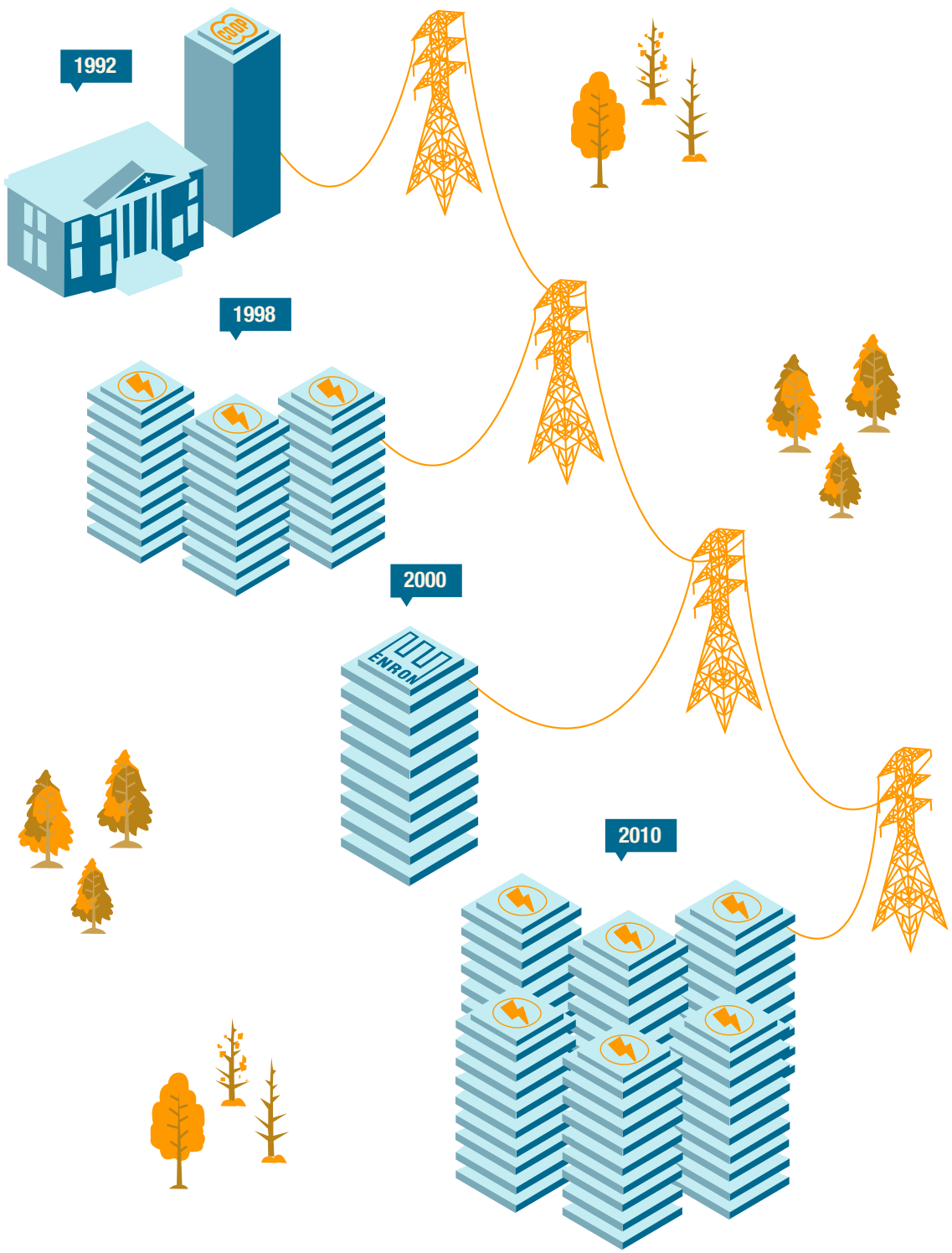
Not all customers in deregulated areas can access this opportunity. Except in Ontario (where all types of utilities were deregulated) and a handful of US municipal utilities, only customers served by investor-owned utilities (IOUs) are affected. In general, neither municipal (i.e., city-owned) nor co-operative (i.e., ratepayer-owned) utilities were required to participate. In California, Michigan, and a few others, a range of additional restrictions exist (as of early 2013). In one case, only large customers (i.e., those with loads exceeding a defined kilowattage) are eligible, while in another the total load of customers in the program cannot exceed a small percent of total utility load.

Where available, competitively priced power may be purchased under contract in a wide variety of forms, for customer-specified term lengths. While many buy their power supply at fixed $/kWh rates, others do so based on hourly wholesale grid pricing, or combinations of those two options. Some have combined power procurement with energy efficiency upgrades, using the savings to finance such improvements.

As will be explained below, deregulation is unlikely to spread to more states or provinces (a few have even banned it). Where it does exist, rules, markets, and sales techniques continue to change: some suppliers offer, for example, gift certificates or frequent flyer miles with every megawatt-hour. A few areas are considering allowing utilities to cease supplying power, and limit their activities to delivery. All customers of an IOU would then be required to contract with a non-utility power supplier, or allow the utility to set up that arrangement for them.

Buying non-utility supply also entails some financial risk. In some cases, utility power supply rates have dropped below those of fixed price power contracts, leaving some customers with a relative loss instead of a savings. While many customers have seen savings by buying on their own, others have engaged specialists (e.g., brokers or consultants) to help them buy power more professionally. Still others have chosen to generate some of their power on-site, which may be allowed even where utilities have not been deregulated.

This primer is designed to guide non-residential customers through the basics, and around the most common pitfalls, of those various arrangements.


1992
1998
2000
ENRON
2010

CHAPTER 2

A Little Bit of History

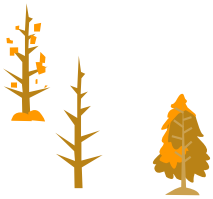
In 1992, U.S. federal laws and regulations started fostering competition among wholesale power suppliers, making it easier for municipal and co-op utilities (but not their customers), and some large industrials, to choose their own suppliers. That process also created new federally chartered entities, the Independent System Operators (ISOs). Covering most areas outside of the west and south, ISOs now control regional transmission grids to ensure equal access for all generators, whether or not they were associated with owners of power lines. In effect, high-voltage transmission became (like the long-distance telephone lines of the '80s) a common carrier. Two Canadian ISOs were formed: Ontario (ON) in 1999 and Alberta (AB) in 2003, to serve the same function, differing only in that they are provincially, rather than federally, regulated.

In 1998, California took the lead in opening up its 3 major utilities, allowing their customers to buy power competitively, but not those behind municipal and co-op utilities. In 2000, however, several large power suppliers (among them Enron) took advantage of vulnerabilities built into CA's power market, resulting in two years of rolling blackouts, huge price spikes, and

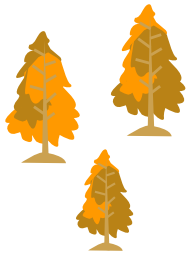
– eventually – a recall of the governor (Gray Davis) overseeing the debacle. The negative fallout from that experience stunted the growth of deregulation in the US: Montana closed its market, and a half dozen others followed suit by creating barriers or delays that caused suppliers to look elsewhere for customers. Since then, no southern or mid-western state (other than Texas) has pursued the option.

By 2010, however, states in New England, the mid-Atlantic area, plus NY, TX, IL, OH, OR, ON, and AB allowed all or some IOU customers to shop for their power supply. CA had also re-opened a small portion (less than 5%) of its electric load to competitive power procurement. In all cases, power delivery remains a regulated monopoly.

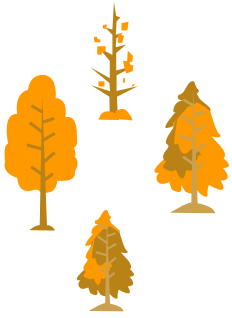
AGREEMENT



METER READ



TWO BILLS



CHAPTER 3

How Does the Purchasing Process Work?

Each area's PUC web site lists the licensed non-utility suppliers serving it, along with their contact information. Customers can contact the suppliers directly, or use a specialist, the various types of which are discussed below. For a commission, such a person or firm will use competitive bidding procedures to secure the best price for the customer. The better specialists also review the proposed contract, called a Power Purchasing Agreement (PPA), for any issues that may require negotiation or alteration.

After the PPA is signed, the new supplier is responsible for notifying the utility of the switchover, typically 10 to 15 days before the next reading of the utility meter. Once the customer starts to receive power under the new contract, the supplier uses the utility's meter readings to calculate the bill. No changes are needed to either wiring or metering. The utility remains responsible for maintaining its distribution system: if there's a power outage or other problem, customers call the utility, not the new supplier.

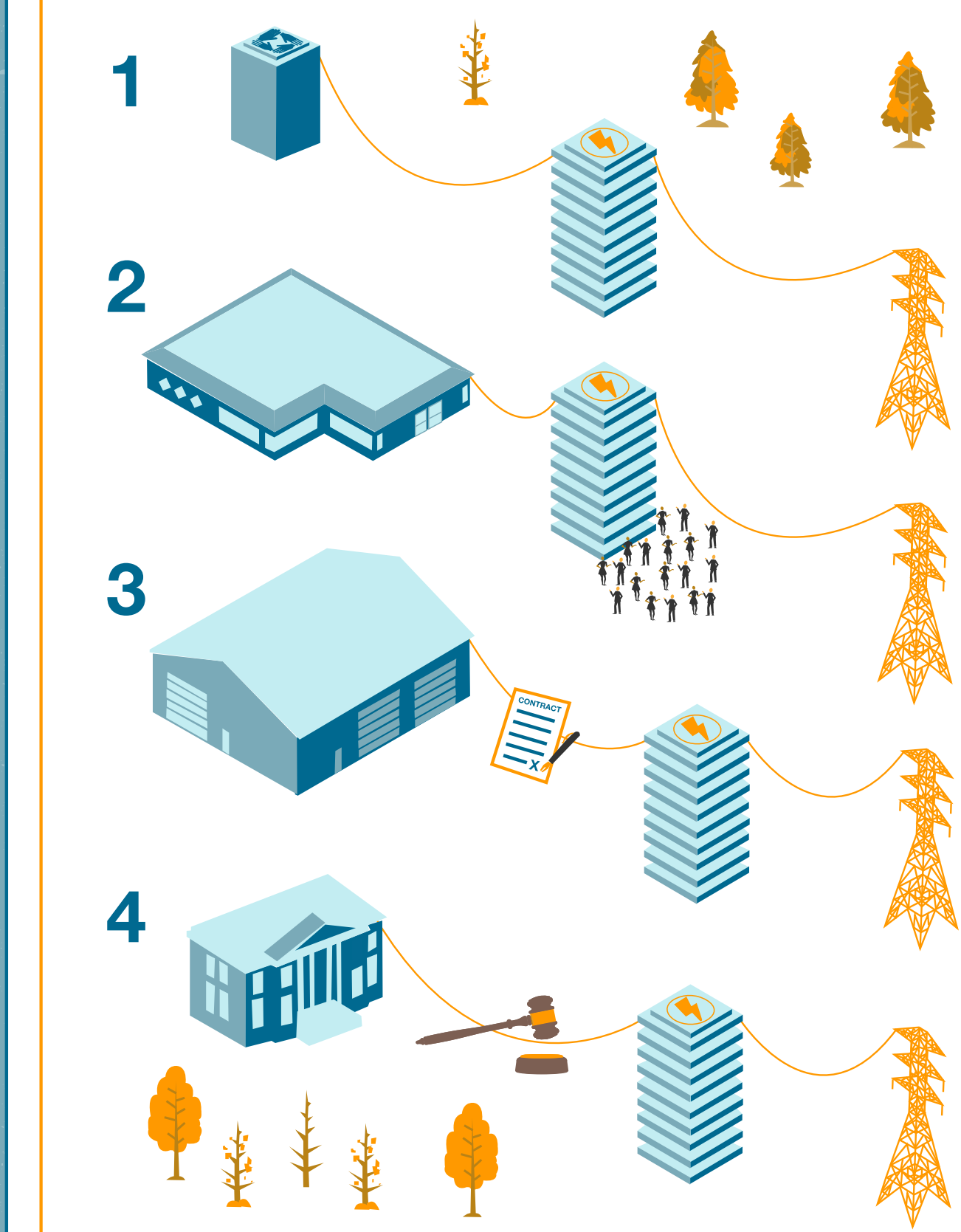
When a customer buys power from a non-utility supplier, he may receive an energy supply bill from that company and a separate bill from the utility covering delivery, plus the various metering, program, and other charges found in a typical utility bill. Many suppliers have arrangements with utilities wherein their charges instead appear as line items on the utility delivery bill (i.e., are "consolidated") and the customer makes one payment to the utility, which then passes on the supply portion to the non-utility supplier.

The important concept for the customer is that supply of the commodity itself is priced and charged separately from the delivery of that commodity to the user.

In most areas, supply is half or less of the total cost of electricity. The supplier's price (or pricing method) is seen in its "bilateral" contract with the customer, i.e., it's whatever the two parties have agreed to, regardless of the utility's supply tariff. In almost all cases, customers can choose to continue buying from their local utility. The utility remains their "provider of last resort", buying (and/or generating) wholesale power and re-selling it to them under its a supply tariff rate set by the PUC.

Where tariffs are simple (e.g., residential or small commercial), a utility may publish a "price to beat" or "standard offer" that may be compared to a fixed price from a non-utility supplier. The web sites for some PUCs in deregulated areas offer such comparisons on a monthly basis. In many cases, however, commercial and industrial tariffs are sufficiently complex that such comparisons require an expert eye to ensure savings.

As retail power supply markets have matured, so have many utility supply tariffs. When such regulated pricing rises, a customer taking a fixed price from a competitive power supplier may see savings relative to it – but not necessarily relative to what was paid in the prior year. Pricing from non-utility suppliers tends to closely follow that seen in regional wholesale power markets which operate like the stock market, with similar price volatility. When wholesale prices drop, utility supply pricing may not do so for months, while competitive supply pricing may drop quickly (unless fixed). Both forms of pricing, however, may be higher than previously seen. When tariff prices drop (e.g., due to a reduction in utility fuel costs), customers with fixed-price contracts have seen a relative loss. While many customers have saved 2 to 20% (or more), buying competitively-priced power does not always yield savings.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CHAPTER 4

Four Ways to Buy Power

Power customers enjoy a variety of ways to discover competitive power pricing, and to sign up with new suppliers. Following is a quick overview of those options, followed by a more professional approach.

Start by determining which accounts are eligible to switch suppliers. Note that only customers holding utility accounts may switch their power supply to a non-utility supplier. Those who instead pay a landlord for their power are not utility account holders. Even in areas where utilities have been deregulated, most of those served by municipal and co-operative utilities cannot access competitively priced electricity (Ontario being the lone exception, where all utilities were deregulated). Deregulated utilities are listed at each state's PUC web site. To access any US PUC web site, go to www.naruc.org/commissions.cfm and follow the instructions. In Canada, go to www.ontarioenergyboard.ca or http://www.auc.ab.ca

Customers eligible to seek power from a non-utility source will find many licensed retail electricity suppliers eager to serve. Lists of them, with contact information, may be found

at PUC web sites. At the site, look for pages with titles such as “Power To Choose,” “Retail Electricity Providers,” “Licensed Retailers/ Marketers,” etc. or enter similar language in the site’s Search field. Not all suppliers serve all utility areas or all types of customers. PUC web sites typically feature ways to sort through them to find those appropriate to your needs.

Unless a customer has knowledge of suppliers (e.g., service, capability, pricing), however, selecting one may take some time. To provide guidance and a benchmark, some PUC web sites post fixed-price quotes for suppliers of small accounts (e.g., those with peak loads under about 10 kW). Care is needed when comparing such prices. They may be good for only the first month of service, with the price thereafter varying with the market. In other cases, a seemingly good price may be tied to a multi-year contract containing heavy penalties to end the arrangement during its term.

Here’s how four customers chose their power suppliers:

1. SIGN UP WITH THE “SHINY ONE”

Customer #1 was the director of a chain of non-profit clinics. While at a trade show for building services, he stopped at a booth staffed by personnel from a local power supplier. The attractive young lady at the welcome table said that her firm “offered the best price in town”. Based on her charm and claims, he signed up all his accounts for a year at a fixed price. After the first few months of service, the savings were much less than expected. When he tried to get out of the contract, the supplier pointed to its hefty penalty clause. The customer resolved that, next time, he’d read the fine print and get some professional help before choosing another supplier. While many customers choose based on word-of-mouth or other informal means, and are satisfied with the results, doing so does not take full advantage of market competition.

2. JOIN THE CROWD

Customer #2 wasn’t sure how to choose a supplier for his shopping mall, and asked his local chamber of commerce for help. That organization sponsored an aggregation group for local businesses, and invited him to join. While only a fixed price option was offered, it was secured through a professionally run competitive bid, and he could drop out any time with just 30 days notice. He saved a little money over the utility’s price, and avoided any risk or headaches. The cost of the aggregation service was built into his electricity price, so he incurred no direct cost for a specialist.

3. CALL FOR BACKUP

Customer #3 was an industrial facility with sites across several areas. He wanted to secure better pricing for his large accounts than had resulted from using his in-house purchasing personnel. To do so, a consultant was chosen and paid a fixed fee. The consultant developed a Request For Proposals (RFP) that not only sought the best price but included ways to arbitrage the customer’s on-site backup generation, his capability to shift load upon request, and financial ability to absorb price risk when hourly wholesale markets became volatile. Multiple real-time bids were secured from the ten largest suppliers to obtain a very favorable price. While the consultant was well paid, over the term of the contract the customer saved five times more than the consultant’s fee.

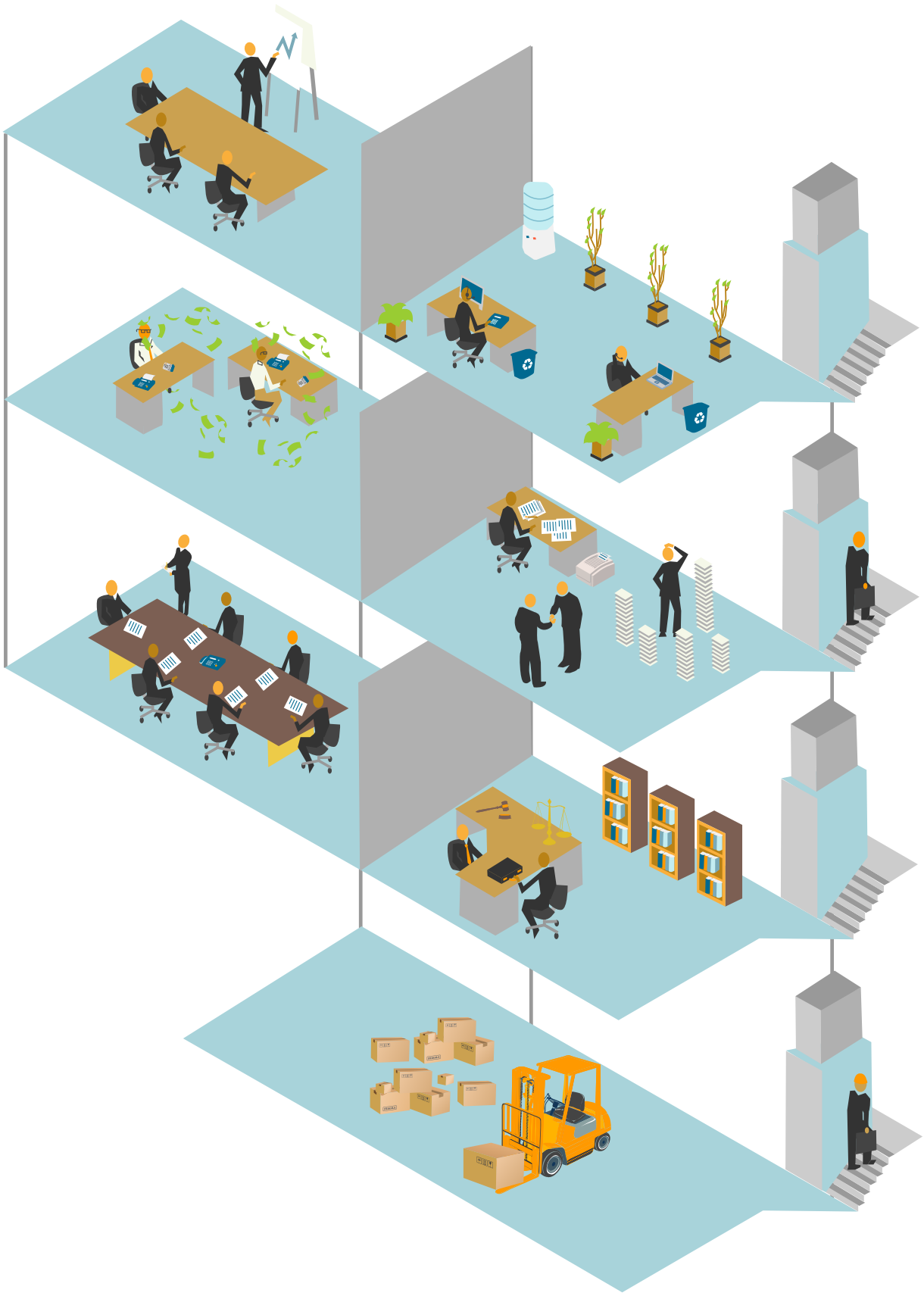
4. AUCTION IT OFF

Our fourth customer was a large private university that needed to tighten its fiscal belt. It couldn't afford a consultant, but wanted to show its board of trustees that it used the power of competition to get a good price. To do so, it found a broker that used an on-line reverse auction process to visually demonstrate competition among suppliers. Through a simple and standardized RFP, the broker distributed the university's desires and data to five suppliers chosen by him. During the live electronic auction, the board witnessed suppliers jaw-boning each other's pricing down until only the lowest bidder was left. The winning price included the broker's commission, so the university secured lower pricing at no upfront cost.

BOTTOM LINE

One of the benefits of competition is that it offers customers choices, including how to select a power supplier. Getting the most out of the competitive market involves attention to that process. Various levels of professional help are available, and it makes sense to take advantage of it, especially the first time around.

Training courses in energy procurement are available through the Association of Energy Engineers (www.aeecenter.org). Details on its online power procurement course are available at www.aeeprograms.com/realtime/PowerPurchasing. Where licensing is required, licensed brokers (which is the case in most states) are listed at their PUC web sites. A list of certified energy procurement consultants (who have taken a 3-day class and passed a 3-hour test) may be found at www.aeecenter.org/custom/cpdirectory/index.cfm At that page, enter your state or province, nation, and (in the certification choice field) choose "CEP – Certified Energy Procurement Professional." Other fields may be left blank.



CHAPTER 5

Preparing a Facility to Buy Power

Experience has shown the need for preparation prior to seeking bid pricing, especially for first-time customers. Concepts like separate power services, competing suppliers, variable price power products, and price risk may seem foreign to those responsible for handling utility billing and costs. Some discussion and training may be needed to ensure a smooth transition and a trouble-free contract.

Prep time and effort are roughly proportional to the complexity of an organization, its geographic spread, and the number of electric accounts. When there are many departments that must be involved or consulted, or more than a dozen accounts, or the accounts are behind multiple utilities, more time should be allotted to getting the organization's energy house in order. Failing to do so may result in embarrassment, loss of credibility, and/or high electric bills.

Step 1

Assess available options, typically by reviewing information at the utility and PUC web sites covering areas in which a firm has facilities. It may turn out, for example, that some sites are

behind municipal or co-op utilities that are not open to competition, or that limits exist with regard to the amount of load that is allowed to compete.

Step 2

Determine how power is presently purchased for all accounts:

- Which accounts are served by which investor-owned utilities?
- Who handles utility billing at each site?
- Do any facilities have special relationships (e.g., off-tariff discounts) with their utilities or local governments that could be complicated or lost if power was taken from a non-utility supplier?
- Are any sites presently purchasing from non-utility sources?
- If so, who manages each of the contracts and when are they up for renewal?

If facility or purchasing personnel at dispersed sites are presently allowed to pursue power procurement on their own, immediately issue a memo suspending that ability until the central office has nailed down its purchasing policy and procedures. Otherwise, it may be necessary to wait months (or years) for uncoordinated contracts to run out before proceeding.

Step 3

This involves the decision-making process:

- How will the main goals of the power procurement effort be determined, e.g., by an executive, or through a committee?
- What departments will have input when crafting those goals and choosing a supplier?
- How will the bidders' list be developed: word-of-mouth recommendations? Issuing a Request for Information (RFI) to all suppliers? Accepting recommendations from a specialist?
- What department and person(s) will oversee a company-wide power contract?
- If a consultant is to be retained to assist the effort, how will he or she be paid, and from what budget(s)?
- While most facilities are simply seeking to cut their electric bills, consideration should be given to the following additional goals:
- Can (or should) this process be used to polish the corporate image (or fulfill an existing mission statement or commitment), by buying some of the power from a renewable source (e.g., wind)?
- Does a desire exist to integrate the firm's marketing with its purchase of power (as described below under "Marketing")?
- Do plans exist to improve the firm's energy-using equipment (e.g., lighting, HVAC) that could be funded from procurement savings to further cut the firm's overall energy bills?

To answer those (and other) questions, and manage the process, some – or all – of the following departments may need to be involved.

- Purchasing
- Facilities Management

- Legal
- Accounting
- Leasing
- Public Relations
- Environmental/Sustainability
- Marketing

Failing to do so may result in unforeseen problems or internal dissension. To coordinate such personnel, some firms form a working group with one person (usually from Purchasing) taking the lead. That person chairs the group and incorporates input when developing its Request For Proposals (RFP), sometimes with assistance of a specialist. The group may meet once in person to inform those concerned regarding how competitive power procurement works, and then meet virtually via email to review the draft RFP. A subset of the group may then be involved in reviewing bids and choosing a supplier.

PURCHASING

When buying products for a company, the Purchasing department is usually in charge: it has experienced personnel, contracts, and procedures in place. But few purchasing agents have much experience when it comes to energy, other than liquid fuels (e.g., fuel oil and gasoline). Some may have competitively purchased natural gas, but not electricity. Many hand the task to brokers or consultants, but that may miss various internal corporate factors that come into play when buying power.

FACILITIES MANAGEMENT (FM)

Because it has a grasp on how a facility's power is being used, FM needs to be involved. FM personnel are also likely aware of any impending changes that could impact electric usage and demand (e.g., a lighting upgrade). A significant change in usage, without informing the supplier, could trigger penalties in a power contract.

LEGAL

The Legal department will review proposed contracts to ensure that all provisions are acceptable, and risk is minimized. It should also check on any potential conflicts with existing arrangements (e.g., a special utility rate).

ACCOUNTING

If not apprised in advance of a change of energy suppliers, accounting personnel may be confused when they start receiving electric bills from a non-utility supplier. This is especially important where multiple accounts are involved: the supplier may send one bill covering several sites, while the utility continues to send a separate bill for each site. Accounting may prefer that the supplier send a summary bill, or follow a specified process for submitting it electronically.

LEASING

If the client is a commercial real estate facility, Leasing (also called Tenant Relations) may need to inform tenants of a change in suppliers and electric rates. Attention may be needed to the wording of existing leases to avoid possible confusion. In one case, an enterprising tenant found that the lease called for payment to the landlord of "the charge as shown on the monthly bill from the utility". With a separate

supplier, however, the utility's bill would shrink once it no longer included supply charges. The tenant claimed there was therefore no requirement to pay additional charges to a non-utility supplier. To avoid this problem, only power suppliers that can have their charges consolidated onto the utility's bill might be chosen. Not all do so.

PUBLIC RELATIONS AND ENVIRONMENTAL/ SUSTAINABILITY

Because customers may choose a supplier whose power comes from more environmentally acceptable sources (e.g., wind instead of coal), the choice of supplier may be of interest to both the Public Relations and Environmental/ Sustainability offices. Choosing a supplier whose power comes from earth-friendly sources could help fulfill a corporate mission statement or commitment, polish a company's image, or reduce its carbon footprint, if desired. When an organization buys cleaner power, that's an ideal subject for a press release, its advertising, and an announcement on its web site.

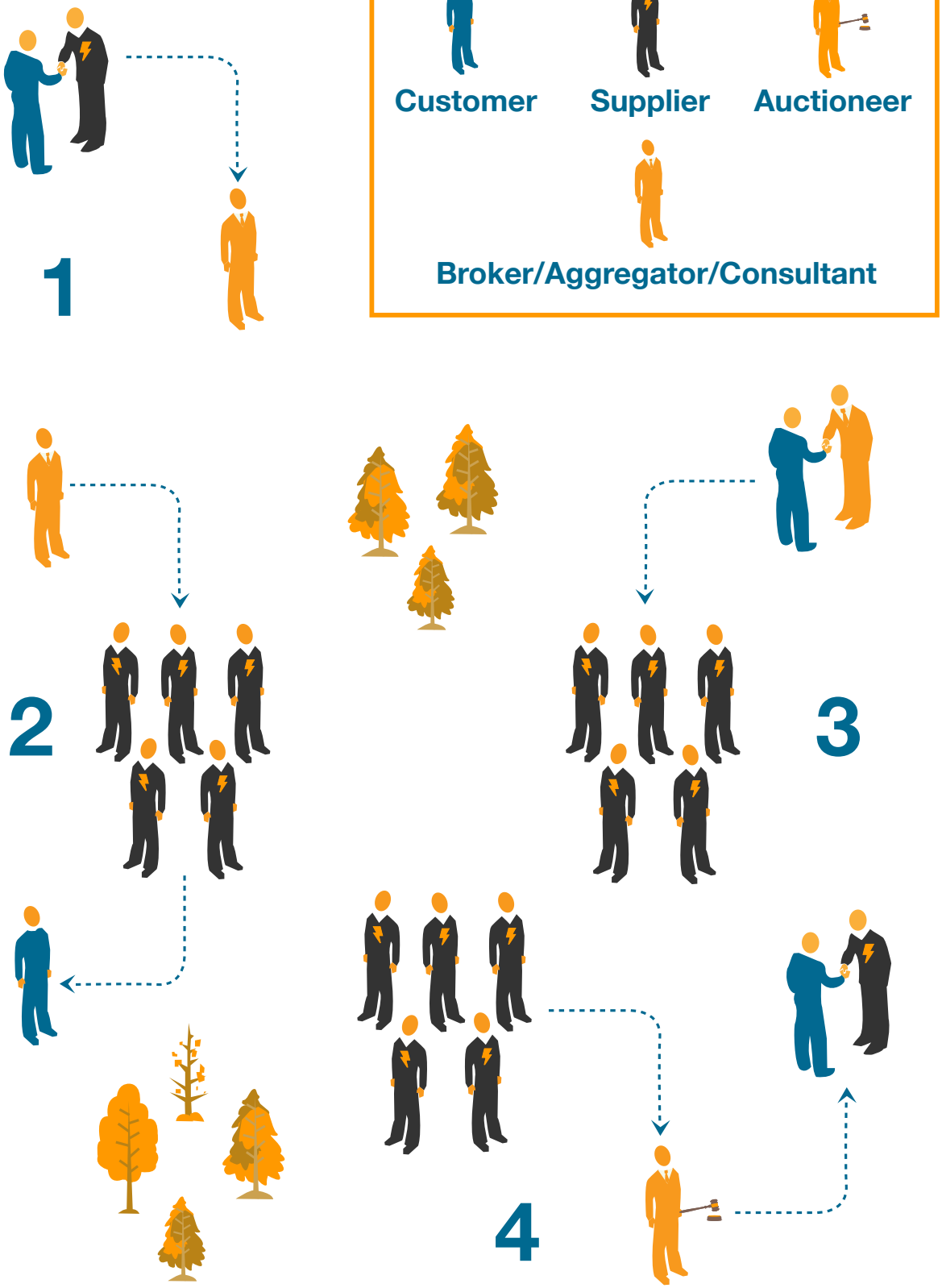
MARKETING

If the customer has something that may be of value to a supplier (e.g., use of the customer's name in the supplier's advertising), there may be a basis for negotiating a lower rate as part of an exchange. An airline, for example, could offer free frequent flyer miles to the supplier's new customers in exchange for an electric rate cut to the airline. A university could offer to rename its athletic field for the term of the contract, or a large retailer could agree to promote the supplier as its power source at its web site, or in pay envelopes, or on printed receipts.

Other issues may also merit discussion within the working group, such as:

- Is there a need or desire to fix a long-term price, even if possibly higher than that of the utility, in order to create budget certainty for several years?
- Do any sites plan to install on-site generation, or make any significant changes that could impact electricity consumption in the near future (e.g., solar panels, cogeneration, adding or vacating space)?
- Does the firm have any existing relationships with energy suppliers, e.g., for natural gas, that it may wish to exploit to get a better deal on electricity?

Failure to involve appropriate personnel and to consider such issues has caused trouble or lost opportunities for more than one customer. At least the first time they pursue this process, newcomers are urged to consider using a specialist to help them navigate the challenges and opportunities. To that end, let's examine in Chapter 6 the various options for such specialized assistance.


Customer
Supplier
Auctioneer
Broker/Aggregator/Consultant
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CHAPTER 6

Professional Services for Securing Competitive Power

In states or provinces that have deregulated their utilities, many power customers buy their electricity from non-utility suppliers and have the utility deliver it to them. To help choose a supplier, a customer may use a broker, consultant, aggregator, or online auction service, collectively called “energy procurement specialists”.

Let’s look at the pros and cons for using one type over another:

1. BROKERS

A broker is an individual or company having arrangements with multiple power suppliers to act as their sales representative, getting them to compete for the customer’s business. The task tends to be relatively narrow: find the power supplier with the lowest price bid. Other tasks related to the transaction (e.g., bill review, supply contract analysis) may be included, but should not be expected unless clearly defined in the broker’s written scope of work. Possible conflicts-of-interest also need to be considered:

a broker working for suppliers may not be the best person to critique their contracts.

A broker typically has agreements with several (but not necessarily all) suppliers. The broker will receive a commission from the winning bidder that is proportional to the quantity of kilowatt-hours (kWh) bought by the customer. Measured in mills (i.e., tenths of a cent) per kWh, that fee is added to the price the supplier would have charged the customer if no broker was involved. No money passes directly between broker and customer, allowing brokers to claim their service is "free."

In many cases, the customer does not see or know the fee collected by the broker. The broker is typically paid month-by-month, based on the customer's monthly kWh consumption and bill payments, though some suppliers will pay them annually in advance, with a true-up at the end of each year. A broker therefore takes some risk that the customer will stay in business (and pay its power bills) during the term of the contract.

Broker fees vary widely, depending on the size of the customer, with smaller customers being charged a higher mill/kWh rate. A mid-size commercial or industrial customer (e.g., 500 kW peak demand using ~2 million kWh/yr), might incur a fee of 2 to 3 mill/kWh, totaling $4,000 to $6,000 (i.e., $333 to $500 per month) spread across a one-year contract term. Such fees add 1-2% to a typical electric bill (including utility delivery charges). Much larger customers (e.g., 10,000 kW peak demand using 40 million kWh/yr) may incur a fee that's less than 1 mill/kWh.

Broker fees are not regulated. While some suppliers limit fees to about 5 mills/kWh, at least one allows up to 10 mills/kWh (i.e., $.01/kWh).

If asked, most suppliers will inform a customer of the broker's fee but, absent such a request, are not required to do so. A customer may ask a broker to reveal his fee.

In most competitive retail power markets, brokers must be licensed (exceptions include New York and Michigan). Lists of licensed brokers may be found at a state's PUC web site. A broker's license may be pulled for serious violations of commercial behavior, but such cases are very rare.

Because the commission is proportional to a customer's kWh consumption, an incentive exists to enter customers into multi-year contracts that ensure an extended cash flow for the broker. Since brokering fees vary among suppliers, a broker also has an incentive to steer a customer to those suppliers that pay the highest fees.

Some types of customers (e.g., commercial real estate) would rather use a broker than try to find low pricing on their own. There's a lot to be said for a specialist who brings expertise and experience to the table, but never submits a bill for it. And if the fee gets passed on to tenants, a landlord is essentially indifferent to it. One can then still fairly claim that a service to get the best price for the tenants was secured at zero cost (to the landlord).

2. AGGREGATORS

Aggregators gather and bundle groups of customers and bring them to a supplier. In many ways, they are essentially brokers. Four states, including Texas, require aggregators to be licensed. Like brokers, aggregators receive commissions, though the formula may differ depending on the type of aggregator.

Aggregators serve a useful function for small customers whose kWh volume is too low to have negotiating leverage, and may otherwise incur higher brokering fees. Some existing customer organizations (e.g., BOMA chapters, hospital associations, municipally-based buying groups) act as aggregators for their members. They receive a commission based either on the customer kWh volume or some other formula (e.g., $X0,000 per year) to bring members to a supplier. In some cases, the aggregation group may use a broker to help it find the best price. The winning supplier may pay separate commissions to the broker and the organization, or the broker may split the fee it receives with the organization.

Towns and cities (e.g., Chicago) in some states have, through referenda or legislation, secured the right to act as aggregators for their residents, including homeowners and businesses. Called "municipal (or community) aggregation", this process may allow an opt-out to those not wishing to leave their utility supplier, or wishing to seek a supplier on their own. A recent municipal aggregation allowed a small city to collect a 1 mill/kWh fee for all power it secured for residents, leading to a commission of several million dollars a year – just the trick to plug a hole in its budget.

3. CONSULTANTS

Like brokers, consultants help customers find competitive power pricing. Unlike brokers, they are paid directly by customers, typically under fixed fees for a defined scope of work. That scope may include (in addition to lining up a winning bidder and negotiating a contract) analysis of usage and optional delivery tariffs to further cut the total electric bill. Consultants are not, however, licensed by any jurisdiction: anyone can claim to be a consultant and offer power procurement services.

Consulting fees vary widely but tend to mirror those of brokers. Some consultants prefer to serve large customers (those using at least several million kWh/yr) and collect – usually in a lump sum – a commission when a power deal is done, rather than receiving small payments each month. Unless a consultant also has brokering arrangements with suppliers, there is no incentive for him to limit the competition to those offering higher brokering fees. Unlike a broker's commission, a consultant's commission should not be proportional to the length of a power contract unless a multi-year deal entails much more work or complexity.

4. ONLINE REVERSE AUCTIONS

They work like eBay (except that the lowest bidder is the winner) and are a popular price discovery method for many types of products. Specialized online energy auctioneers (of which there is a handful) act essentially as brokers. Each is active nationally or regionally and holds multiple state licenses. Like a broker or consultant, an online auctioneer will handle the procurement process, but features a live auction visible on-screen to both competitors and the customer. Within a defined time or number of bids usually lasting less than an hour, such events provide both excitement and clear evidence of competition.

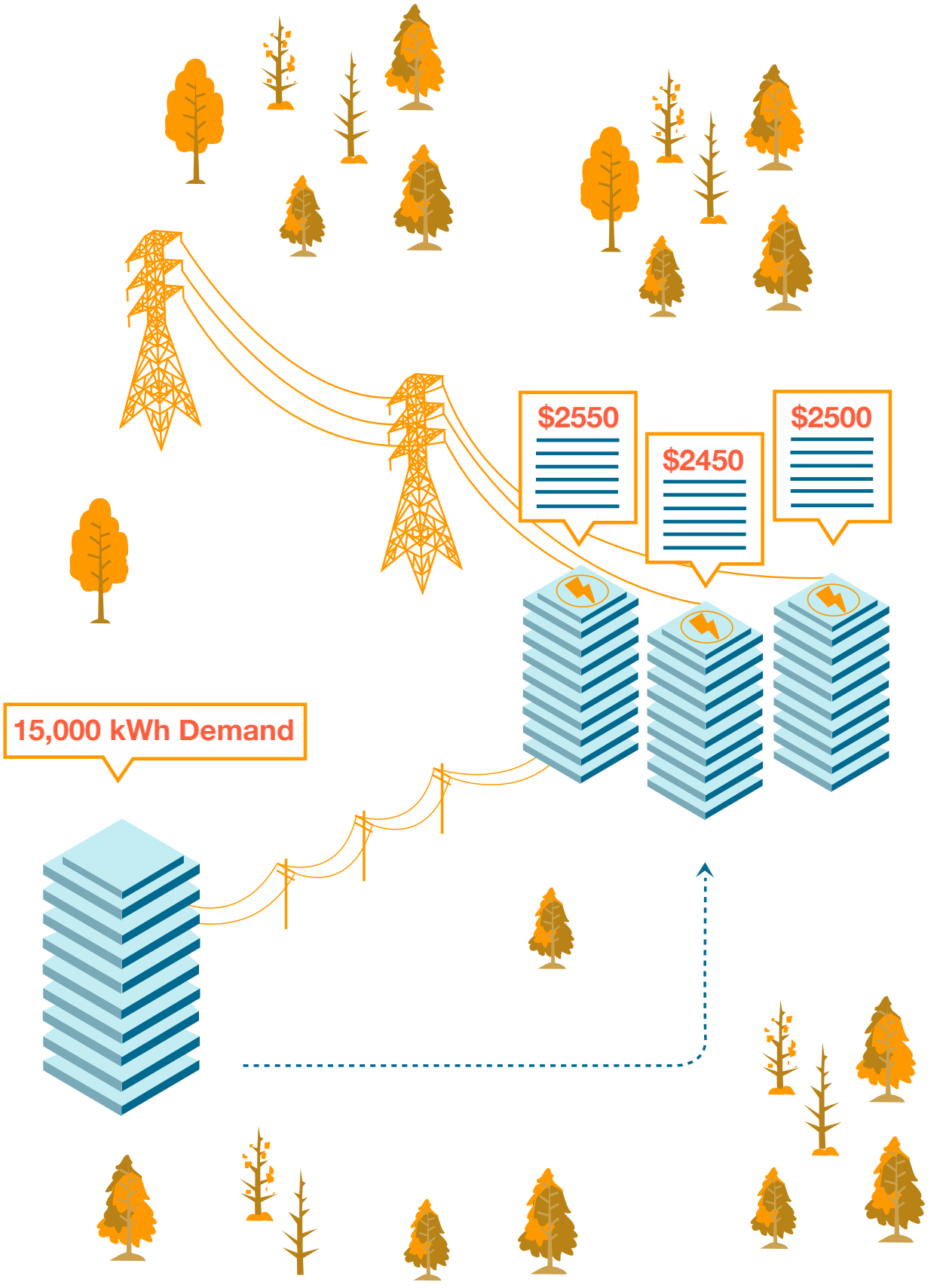
Brokers and consultants may use an online auctioneer as part of their services. Like a broker, the auctioneer has arrangements with multiple (but not necessarily all) suppliers and collects a brokering fee from the winner. It shares that fee with the broker or consultant

that brought the customer to its service. Some consultants have been known to use online auctions as a backdoor way to collect a hidden additional commission without needing a broker's license.

Some auctioneers perform contract review and other procurement services. Such analyses may not be as rigorous as a consultant because, once again, an auctioneer is compensated by the winning supplier. Due to some past disputes, some power suppliers will not work with some auctioneers, thus limiting the customer's choice of suppliers and price competition.

FOUR TIPS FOR POWER CUSTOMERS

- Like any other service, power procurement assistance may be subjected to competitive bidding. Consultants can be forced to compete by quoting a lower commission, or brokers forced to quote a lower mill/kWh rate. Such competition works best when the potential customer is large.
- Ask the consultant or broker to provide procurement credentials or describe any professional training in the field. The only independent credential in this field is the Certification in Energy Procurement (CEP) offered by the Association of Energy Engineers (AEE), discussed above in "Four Ways To Buy Power".
- Your contract with a consultant should not allow collection of a brokering or auction fee (or any other reward) on top of the consulting commission. While considered unethical, doing so is not otherwise illegal.
- Online auction software is available from several sources. Many large commercial firms use it for big-ticket purchases (e.g., cars, computers). While not cheap, it may pay for itself the first time it's used to buy power. When doing so, it pays to have an experienced consultant involved in the process (at least the first time) to avoid embarrassing or costly mistakes.


$2550
$2450
$2500
15,000 kWh Demand

CHAPTER 7

Components of Competitive Power

Electricity pricing can be complex: even experienced buyers may not understand what's built into their power price. To avoid unwanted surprises, let's dissect that pricing and see what can be done to minimize it.

When a retail customer buys electricity from a competitive supplier, the utility delivers it through the same wires it previously used when providing its own power to the customer. The utility then charges only for delivery, at the same rate as it previously charged for that service.

The competitive supplier's bill then covers the actual energy - and the capacity to generate it - plus several other charges discussed below.

While some customers opt to receive a "consolidated" bill (in which the competitive supplier's charge appears as a lump sum on the utility's bill), this discussion assumes that a separate supply bill is received. Taxes may appear on both bills but are not an issue here.

Let's start with what the utility will charge to deliver that power. Recall that delivery pricing is not affected by deregulation, and may

constitute 50% or more of a customer's total cost for electricity.

The major charges built into delivery may include:

- high-voltage **transmission** within the utility territory to move power at hundreds of thousands of volts
- primary and secondary **distribution**, where voltage may be stepped down several times as the power is moved prior to arriving at a customer's site, usually at 480 volts or less (large facilities may receive it at higher voltage and step it down using their own transformers)
- **reactive power**, which corrects for power quality (i.e., low power factor) at a customer's site.

Transmission and distribution may be charged based on both how many kilowatt-hours (kWh) were delivered and on the peak demand (i.e., highest rate of use) during a billing period, in kilowatts (kW). Reactive power may be charged in $/kVAR (kilovoltamps reactive) below a defined power factor level.

Fixed charges for metering, billing, special programs, etc. also remain on the utility bill.

The competitive supplier's supply charge may include the following components which – depending on price structure – may or may not be seen as separate line items.

Energy covers the kWh that are generated through arrangements by the supplier, and are consumed at the customer's facility. The cost to transmit the energy to the grid zone (or utility boundary) is typically included in the supplier's energy price. While appearing as a constant $/kWh in a customer's fixed price contract, the price paid by the supplier to a generator and/or the ISO may vary hour-by-hour based on that seen at the local wholesale power market. Energy may account for 70% (or more) of the total supply bill.

Capacity ensures sufficient generation is available to meet the customer's expected peak demand. It may be based on a facility's peak demand at the time the entire grid peaked, or as an average of the facility's highest peak monthly demands seen in the summer months (as shown on the utility bills). That number is then bumped up by a reserve margin (12 to 16%) to derive the customer's capacity "tag." It may be revised annually based on the peak seen in the prior 12 months, or at a defined other annually occurring date. To calculate the cost, that number is then multiplied by a capacity price developed in the wholesale market (monthly, seasonally, or annually). Priced and calculated differently across the various deregulated markets (except for Texas, which has no capacity market), it may account for 4 to 15% of the total supply bill.

Unaccounted for Energy (UFE) / line loss is billed to the supplier by the utility. It covers energy lost in the utility's distribution system while delivering the supplier's power to the customer. While varying widely, it may account for 3 to 10% of the total supply bill.

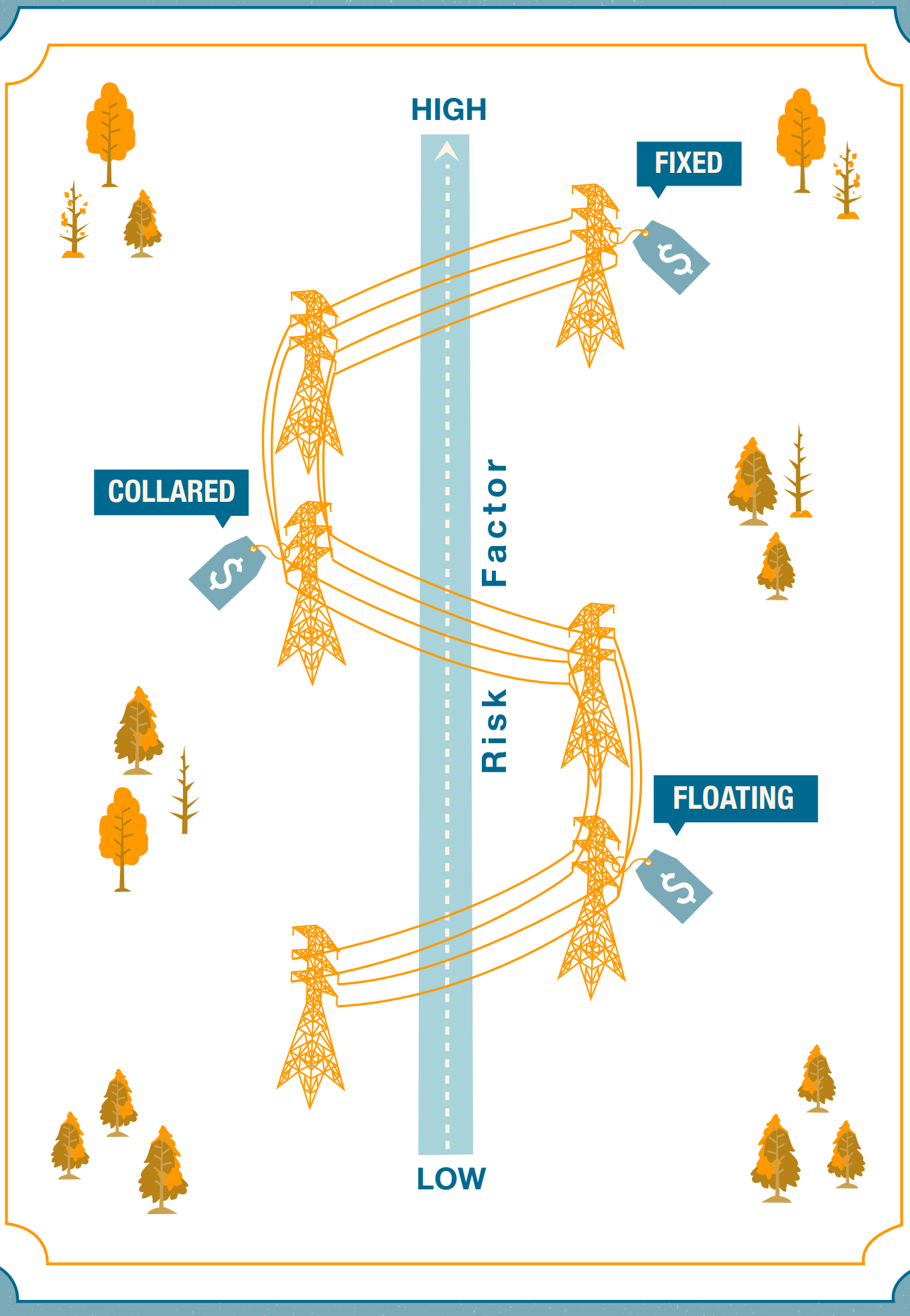
Ancillary services are billed to the supplier by the ISO, which provides balancing, reserves, black start, and other technical benefits needed to "keep the lights on." Together, the cost of

these services is typically passed through to the customer and may account for roughly 5 to 10% of the total supply bill.

Broker's commission (where one is used) may be 2 to 8% of the total supply bill.

Hedging is built into fixed pricing, and covers costs and upcharges incurred by the supplier when buying (e.g.) forward blocks of wholesale power at a fixed rate, and/or financial instruments (such as futures and options) to ensure a fixed price. Hedging may be a significant part (20 to 30%) of the energy portion of a fixed price but is generally not needed when price floats, as described below.

Overhead, management, and profit (OM+P) is what the supplier makes on the deal, and may be about 5% (or less) of the total supply bill.


HIGH
FIXED
$
COLLARED
$
Risk Factor
FLOATING
$
LOW

CHAPTER 8

Common Types of Power Products

While many (if not most) customers take fixed-power supply pricing, that's not the only option. By accepting some price volatility, a lower price may be secured. Allowing the energy price to float, for example, allows a supplier to avoid most hedging costs, and reflect that difference in the customer's pricing.

The various types of pricing methods lead to a variety of power "products" that may be offered by a supplier. Each product is designed to balance a customer's tolerance for price risk with the desire for lower pricing. Note that price risk is not supply risk: the lights don't go off if the price jumps (unless one fails to pay the bill). Instead, it means that there is a greater chance that monthly price will vary more than expected, or desired. Here are some of the most common options.

FIXED PRICE

All components are fixed, as long as a customer's monthly usage remains within a defined "swing" or "bandwidth," i.e., allowable

variance, relative to usage in the same month in the prior year. If changes have occurred at a facility since that time, it is up to the customer (or the specialist) to instead provide projected monthly usages that will then be stipulated in the contract. A typical swing is at least +/- 10%, with many suppliers offering +/- 25%. Any usage outside the swing may incur penalties in addition to the cost of securing or disposing of the differential kWh involved. Unless a customer has unusually large process loads (e.g., industrial), or uses electricity for space heating, or has recently altered the facility, it would be unusual for the monthly kWh to vary more than 25% relative to the same month in the prior year.

COLLARED PRICE

Total supply price is allowed to vary month to month, but within a price range stated in the contract. A variation on this method is "capped" pricing: it won't rise above a defined level, but could drop lower, based on the wholesale energy market price.

FLOATING (ALSO CALLED "INDEXED") PRICING

A customer may specify that some (or all) of the previously discussed components be allowed to float, based on wholesale market pricing (i.e., the "index"), while others remain fixed. Such a mix results in a monthly varying price, with the overall variation depending on the price volatility of the chosen floating components. With a floating energy (not total supply) price, the supplier gathers the remaining components (including capacity) into a fixed $/kWh adder that is constant from month to month. The price of a floating component (in this case, the energy) may be shown as a separate line item on the invoice. When all component prices are floating, the supplier's adder may represent just the overhead, management, and profit, and (if a broker is involved) the broker's commission. Floating pricing maximizes the customer's price risk, but doing so generally yields the lowest average annual price.

HEAT RATE

Essentially a floating price where the index is the local wholesale price of natural gas instead of the local wholesale price of power. A heat rate (i.e., BTUs of gas per kWh generated), is the stipulated efficiency of generation (where it is mostly gas-fired) on which pricing may be based: the higher the heat rate, the higher the factor to be multiplied by the hourly (or monthly) wholesale price of natural gas.

BLOCK AND INDEX

A mix of floating and fixed pricing wherein a customer may choose to buy a fixed-price block of energy (e.g., 60% of projected monthly kWh) and let the price of the remainder of the usage (the other 40%) and the cost of capacity float with the wholesale markets (i.e., the index). A fixed adder to all kWh is included to cover other components. This option allows a customer to manage the desired level of price risk, while not requiring the supplier to spend much on hedging, beyond ensuring the price of the block.

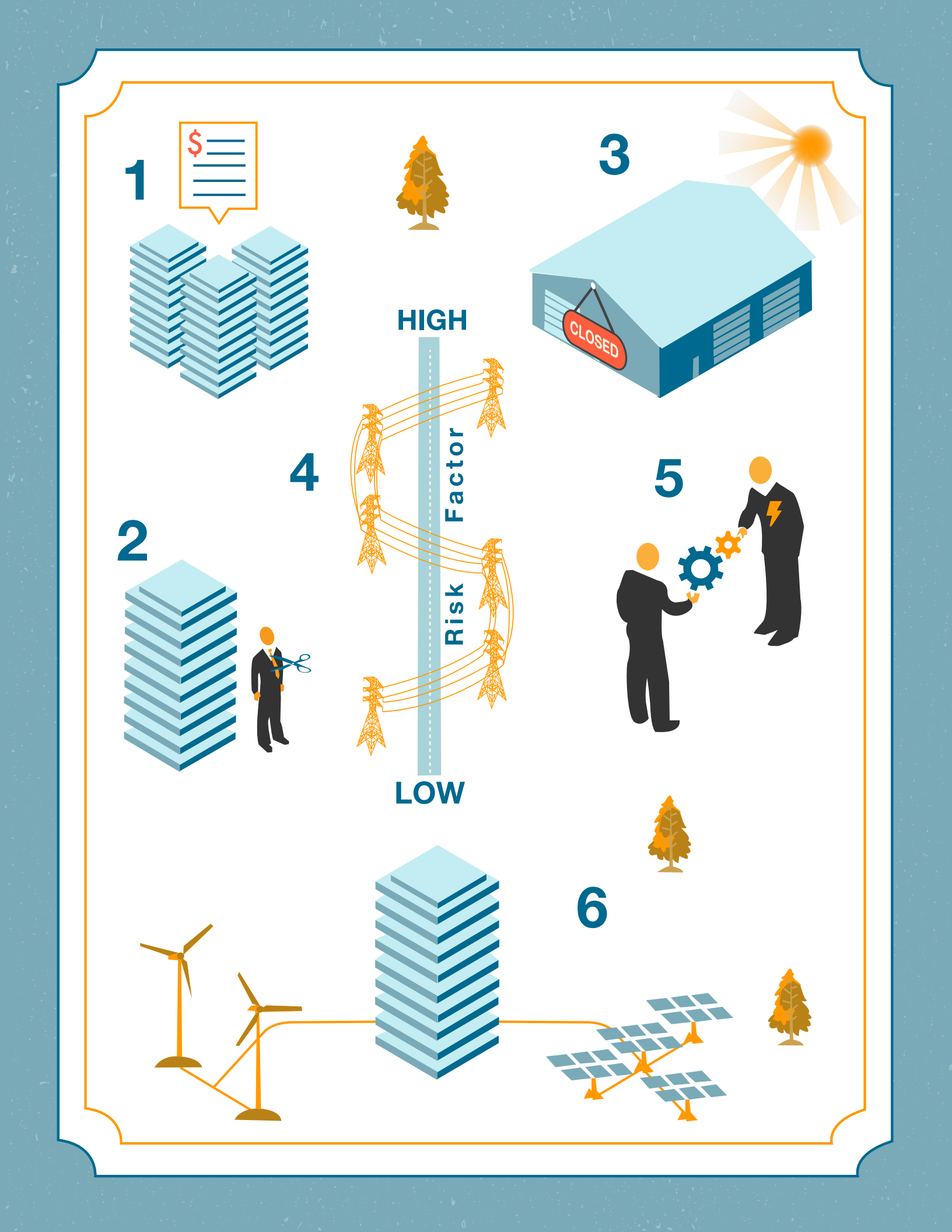
GUARANTEED SAVINGS

A rare option sometimes available when a power market first opens, this product offers pricing that is always a defined percentage (typically 5% or less) below the utility supply (not entire) price. Because a utility's price may vary (e.g., due to time of year or from a fuel adjustment charge), this product is effectively

a floating price wherein the utility supply price is the index. Such offerings often disappear as markets mature, but are an easy way to ensure some savings relative to doing nothing. It's important, however, that the customer have some means to independently verify what the supply price would have been had the customer remained with the utility.

Various other types of products exist (some more exotic), but the above reflects those most commonly used. A good supplier (or specialist) will lay out these options for a customer and explain the pros and cons of each. Many suppliers provide short descriptions of their main products at their web sites.

Now that we have a clear idea regarding what's in our power price, and seen how it may be packaged into a power product, let's review in the next chapter some ways to get the best deal.


1
$
3
CLOSED
HIGH
Risk Factor
LOW
4
2
5
6

CHAPTER 9

Minimizing the Price You Will Pay

Customers have at least six ways (aside from competition among suppliers) to reduce their power supply pricing.

1. AGGREGATE ACCOUNTS

A customer with multiple accounts may bring together (i.e. aggregate) all power supply needs under one contract, expanding the total kWh to be purchased. A similar end may be achieved by accepting a longer contract term. To keep things simple, let's focus on what a customer may do with a single account in a 1-year deal.

2. MINIMIZE (OR AVOID) A BROKER'S COMMISSION

Brokers can be made to compete just like suppliers. Be ready, however, to verify the reduced commission with the suppliers being handled by the broker. Alternatively, use a consultant working under a fixed fee lower than a broker's commission, or a customer's purchasing personnel could secure professional training in power procurement and do the job in-house. For details on such training, go back to "Four Ways To Buy Power."

3. REDUCE PEAK DEMAND

Taking action to cut annual peak demand may, in a one-year fixed-price contract, reduce the

capacity part of the *following* year's $/kWh charge when the kW capacity "tag" gets reset in that next year. With a floating energy price, it may have a similar impact on the separate capacity charge, or if that charge is built into the supplier's fixed adder.

4. ACCEPT MORE PRICE RISK

That does not mean worrying that the power might go off. Instead, it means being prepared to deal with a fluctuating price that, on an annualized average, is almost always lower than a fixed price. Each time a customer wants to fix the price and/or amount of a component – whether it's energy, capacity, ancillary services, or line loss – a supplier must take cost-fixing actions (i.e, the hedging described under "Components Of Competitive Power") that add to the price. The end result is that an average floating price across a year may be 10% to 20% lower than a fixed price (some claim as high as 30% lower).

Risk from a floating price may be handled by maintaining a reserve in a facility's electricity account to cover those months when price may be higher than expected. Alternatively, a letter-of-credit (LoC) with the customer's bank may be used to cover occasionally high bills. The LoC is effectively a short-term loan to ensure electric bills are paid on time to avoid penalties, with the interest rate on the LoC being lower than the late payment interest rate charged by the supplier.

5. TRADE SOMETHING

As described above under "Marketing," a customer may have a commodity that a supplier values, such as a well-known brand name. A customer may be willing to allow use of its name in the supplier's advertising or web site as a way to attract new customers. Co-marketing (e.g., an airline offering frequent flyer miles to a supplier's customers) may be another way to negotiate a lower rate.

6. GENERATE ON-SITE

A customer may either install generators at a facility, or have a third party install its own on-site system and sell the power to the customer. This option can be complex, so in the next chapter let's look at it more closely.

CHAPTER 10

Buying Power Generated On-Site

About 9% of all electricity consumed in the US is generated through on-site power plants, mostly at large industrial facilities. As energy prices have risen, some universities, industrial parks, and even housing complexes are adopting this strategy. The high capital cost of such systems led many to host private power providers who finance and install their own equipment at customer sites. Such a system supplies part of a facility's energy needs, with the utility (or deregulated power supplier) covering the balance of electricity, and the facility's own boilers covering additional thermal needs. A customer buys the power (and maybe the generator's waste heat) at a discount relative to what would have been paid without it. From the customer's standpoint, that's like getting a cost-free rate cut. The agreement between customer and on-site power provider is called a Power Purchasing Agreement (PPA).

Two types of power systems dominate this field:

Cogeneration

Also called Combined Heat and Power (CHP), provides both electric and heat energy (some

systems that also provide cooling are called "trigeneration")

On-site renewable power sources

Such as solar photovoltaic (PV) panels or wind turbines, provide only power.

Contracts for buying such third-party energy may be complicated, with terms lasting 15 to 20 years. All eventualities (e.g., bankruptcies, asset transfers, changes to energy use) must be clearly spelled out, yielding PPAs that run 20 or more pages. When considering such an arrangement, following are some of the concerns that need to be addressed.

IS A PPA THE BEST APPROACH?

A utility may wish to retain a customer's load rather than have it eroded by an on-site supplier, setting a precedent that encourages others to do the same. Some utility tariffs include a "cogen deferral" rate offering a rate cut to those agreeing to not install on-site power for a defined time period (e.g., 15 years). Securing such a deal typically involves providing a professional cogen feasibility study that shows potential dollar savings relative to the utility's standard rate. By instead securing the deferral rate, one may achieve part of the potential CHP savings without any of the liability, risks, limitations, etc. of a PPA.

CALCULATING THE SAVINGS

Some on-site power systems fail to deliver expected dollar savings. Some customers that hosted large PV systems have watched their kilowatt-hour usage drop noticeably, but not their total electric bills. Due to a mismatch between the facility's load profile and the PV system's output profile, monthly peak demand may not be reduced to the same degree as kWh. When the PPA's price is based on an average $/kWh that had peak demand folded into it, the actual value of the PV power may be less than the power it displaces, resulting in a higher total bill (i.e., utility plus provider).

The same thing has happened with CHP systems whose power is sold at a fixed $/kWh price based on the customer's prior average utility price. If the system shuts down on a high demand day, the utility may levy a demand charge on the customer for his peak demand for that month, which should have been covered by the cogen system's output. When a fixed cogen price is paid for that month's power, however, it will have its own demand charge folded into it. The customer may then end up paying both the cogen provider and the utility for that month's peak demand. This problem may be avoided by metering and paying separately for the kWh and the kW (based on whether it was indeed provided at the peak demand time).

THERMAL METERING IS PARAMOUNT

When buying energy from an on-site provider, proper metering is key to ensuring accurate billing. For small cogen systems, thermal metering is accomplished by measuring the flow rate in the hot water loop from the generator and multiplying it by the temperature difference between the supply and return pipes. Problems may arise, however, regarding the location of such metering. In one case, the provider metered at the inlet and outlet of the generator, assuming that all heat taken from the loop was used by the facility. Much of the waste heat was, however, being discarded out of the cooling tower (which ensures proper operation of the generator) on the same loop. The end result was that the total energy bill was higher than if the cogen system had not been installed.

ENERGY PRICING NEEDS ATTENTION

On-site providers sell their power at a discount (typically 10 to 20%) off the average $/kWh rate paid by the customer at the start of the contract. Under an assumption that utility rates will rise over time, an escalator (e.g., 3%) may be added to that average price each year. While history has indeed shown a relatively continuous increase in power pricing by many utilities, assuming a constant price escalator on top of a rate picked at some point in time may not be the best way to mirror future rates. During the recession years starting in mid-2008, a sustained drop in grid demand, coupled with a large drop natural gas pricing, yielded a significant drop in the supply part of electric rates.

Within 4 years, that part of the bill in many areas fell by over 50%. If a contract had locked in a 10% discount and a 3% escalator at the height of that power pricing, the customer would, 5 years later, be paying (for the supply part of the bill) more than double what would have been paid by taking no action. A better approach is to peg the annual price to the rate the customer would have paid without the system, based on annually published tariff rates. If the utility rate goes up, so does the cogen rate. But if the utility rate goes down, that price risk is borne by the provider, not the customer.

BE AWARE OF EXTRA LIABILITIES

To minimize the cost of natural gas (the fuel of choice for most cogen systems), a developer's design may include a backup fuel oil (or propane) tank to secure a lower delivery rate from the local gas utility. On-site fuel storage could expose the host to fines or penalties if the tank leaks, and may require attending to inconvenient deliveries. Most gas-fired generators require either high pressure gas piping or a gas pressure booster, either of which may entail additional building code approvals and perhaps an increase in liability insurance for the facility. If the generator is too noisy at night (but not in violation of codes), neighbors (or tenants) may complain. Costs for correcting the problem (e.g., acoustic barriers) may then fall on the customer, not the provider.

POTENTIAL HIDDEN COSTS

A PPA allowed a power provider to shut down the cogen system when his wholesale price of natural gas spiked. Doing so resulted in a higher utility demand charge to the customer when the system was off for as little as 30 minutes in a month. Another customer found that the facility's boiler emissions permit was placed in jeopardy because of the additional site emissions from the cogen unit. At another location, a commercial real estate firm wanted to use the space occupied by a cogen system for a well-paying data center client. Under the PPA, the customer would have to pay to re-locate the cogen system to the roof (very expensive) and for any revenue lost by the provider while the system was disabled. That cost was too high, and the landlord lost the potentially lucrative tenant.

SECURING EMERGENCY POWER AS PART OF THE DEAL

Merely having a generator on site does not ensure power during an outage. Many small-scale (i.e., less than 1,000 kW) cogen systems use microturbine generators that are not well suited to act as blackstart generation (i.e., starting and running on their own when utility power has failed). PV systems also run in parallel with a utility's power output (shutting down during a utility outage) and cannot be used as emergency power, unless large

batteries and other components are installed. If blackstart is essential, achieving it through a PPA may involve additional generation and distribution equipment, the cost of which may fall on the customer.

AVOID LIMITS ON FUTURE OPTIONS

Many PPAs contain language that limits a customer's right to reduce power or thermal usage, e.g., from improved energy efficiency. Doing so ensures a steady revenue stream and profit for the provider. In the case of cogen, all of the following have been barred in some PPAs: PV panels, efficiency upgrades, non-electric chillers, and thermal storage (which may shift the time of peak load to hours when waste heat cannot be fully utilized). If space heating from waste heat is a big part of the provider's revenue equation, even installing new windows may be off-limits. For cost-conscious customers seeking to reduce their energy bills (or carbon footprint), such limitations – for 15 to 20 years – may not be tolerable.

CHAPTER 11

Conclusions

Nothing requires electricity customers to switch power suppliers, though that may change in the future. Nothing guarantees savings (relative to utility pricing) when buying from a non-utility supplier, unless the contract specifically states so. Retail power procurement, like many other options available in the commercial world, comes with both opportunities and pitfalls. Customers may pursue the process on their own, or use a variety of tools and/or specialists to assist them. Any organization consuming over $100,000 a year on electricity (that's total electricity spend) and having its own electricity account(s), however, should consider pursuing this process. The time and effort spent on doing so may be a good way to cut or contain its cost for electricity.

POWER PROCUREMENT ACRONYMS WITH TRANSLATIONS

DAM/HAM = day-ahead / hour-ahead markets (real-time pricing)

DR = demand response

DSM = demand-side management

EFT = electronic fund transfer

EWG = exempt wholesale generator (not a utility)

ICAP = installed capacity (LICAP = locational ICAP)

IOU = investor-owned utility

ISO = independent system operator (a form of power pool, i.e., PP)

IPP = independent power provider (not a utility)

LDC = local distribution company (e.g. your local utility)

LF = load factor (average demand / peak demand)

LMP = locational marginal pricing (same as LBMP)

LSE = load serving entity (a power supplier or utility)

OTC = over the counter (i.e., wholesale energy trades outside a regulated exchange)

PP = power pool (agency in a region where utilities coordinate transmission and generation)

PUC = public utility commission (a government agency that creates and enforces market rules to protect consumer interests)

RTO = regional transmission operator (ISO with expanded powers)

RTP = real-time pricing (e.g., based on hourly wholesale grid pricing)

T&D = transmission & distribution

TOU = time-of-use (energy pricing differentiated by time)

UDC = same as LDC

BIOGRAPHY

Lindsay Audin is the president of Energywiz, Inc., a New York-based energy consulting firm. Energywiz serves large energy users, government agencies, energy suppliers, and other consultants, both in the U.S. and abroad.

Audin's 38 years in the energy services industry include 8 years as energy manager for Columbia University and 12 years with private engineering and energy consulting firms, prior to opening Energywiz in 1996. He holds certifications in energy management and energy procurement, and is a LEED Accredited Professional. Audin also teaches courses on power procurement, load profiling, and tariff analysis through the Association of Energy Engineers. His awards include AEE's International Energy Manager of the Year in 1993, and membership in the AEE Energy Manager's Hall of Fame since 1996. He is also a member of several editorial boards for energy and building-related publications. Over 200 of his columns and articles on energy issues have appeared in publications such as Engineered Systems, Architectural Record, and Building Operating Management.