

Ontario Commercial & Industrial Solar

A field guide for people who have to answer the questions

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How to use this. Everything here is sourced to a primary document with a date. Where I could not verify something, it says so and is tagged **UNVERIFIED** — those are the things that will get you into trouble if you say them with confidence in a boardroom. Read Part 1 and Part 3 first. Those two carry most of the argument. The rest is reference you come back to.

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1 Why commercial is a different business

In residential solar you sell against a kilowatt-hour price. In commercial you sell against a bill structure. That single difference explains almost everything else.

A homeowner pays for electricity roughly the way they pay for petrol: a rate per unit, times units. Cut the units, cut the bill. Solar maps onto that story perfectly, which is why every residential calculator looks the same and why the conversation is about panels and payback.

A commercial customer does not buy electricity that way. Their bill has four blocks — commodity, Global Adjustment, delivery, and regulatory charges — and only some of them respond to kilowatt-hours at all. Large parts respond to **demand**, measured in kilowatts or kilovolt-amperes at the single worst instant of the month. Other parts are simply fixed. And for the largest customers, the biggest line on the bill is set by their behaviour in **five hours of the entire year**.

So the same array that eliminates 90% of a house's bill might remove 19% of a factory's. That is not a worse product. It is a different product, sold to someone who will check your arithmetic.

The three things that decide a commercial deal

1 · Which charges the array can actually touch

Anything billed per kWh, solar reduces reliably. Anything billed per kW or kVA, solar reduces *only if it happens to be generating at the moment the site sets its monthly peak*. Anything fixed, solar never touches. Get this wrong and every number downstream is wrong.

2 · Global Adjustment, and which class the customer is in

GA is often the largest single component of a commercial electricity cost. For a Class B customer it is a volumetric rate and solar cuts it directly. For a Class A customer it is allocated by their share of five system peak hours — a completely different mechanism, worth a completely different amount of money, and almost no calculator models it.

3 · Who is buying, in the tax sense

A taxable Canadian corporation, a municipality, a co-op, a sole proprietor and a REIT buying the identical array have materially different economics — because the federal Clean Technology ITC and the capital cost allowance rules treat them differently, and two of those buyers cannot claim the ITC at all. Ask who is signing before you model anything.

What your prospect is actually worried about

A plant manager is not worried about panels. He is worried about roof penetrations voiding a membrane warranty, about a 15-year-old roof, about production downtime during install, about who is liable if something catches fire, and about whether the utility will even let him connect. A CFO is worried about whether your payback number survives a discount rate.

Neither of them is worried about efficiency ratings. If you lead with module specs you have already lost the room.

2 The bill, line by line

This is the part you must be able to walk through on a customer's actual bill, upside down, across a desk. Learn the four blocks and what solar does to each.

Block one — Electricity (the commodity)

What the customer pays for the energy itself. Which version they pay depends on size:

- **Under 50 kW demand or under 250,000 kWh/year** — they are on the **Regulated Price Plan**: Time-of-Use, Tiered, or Ultra-Low Overnight. Small commercial.
- **Above those thresholds** — they are **non-RPP** and pay the monthly average **Ontario Price**, passed through by the utility. This is where essentially every real solar prospect sits.

Solar reduces this line one-for-one on kilowatt-hours.

What changed in 2025. The Hourly Ontario Energy Price (HOEP) was retired on **1 May 2025** under the IESO's Market Renewal Program and replaced by a day-ahead market with locational pricing. For an ordinary commercial customer billed by their utility, almost nothing changed — they still pay one province-wide price and are *not* exposed to nodal prices. If a competitor is frightening your prospect with nodal-price stories, they are describing something that applies to wholesale market participants, not to a behind-the-meter customer.

Source: IESO — Market Renewal FAQs for LDCs and their Customers

Block two — Global Adjustment

Covered in full in Part 3, because it deserves its own section. For now: it is a separate line, it is often larger than the commodity line, and it moves violently.

Block three — Delivery

This is where commercial stops resembling residential, and it is where most solar proposals go wrong.

LINE	BILLED ON	DOES SOLAR REDUCE IT?
Monthly service charge	Fixed \$/month	No. Never.
Distribution — volumetric (under 50 kW only)	\$/kWh	Yes
Distribution — demand (50 kW and above)	\$/kW or \$/kVA of monthly peak	Only if the array is generating at the exact interval the site peaks
Retail Transmission — Network	\$/kW of peak measured 7am–7pm weekdays	Partially — this is the most solar-friendly demand charge, because its measurement window is daytime
Retail Transmission — Line & Connection	\$/kW of max demand, any hour	Weakly. A 3am peak is untouchable.
Low voltage service charge	\$/kW or \$/kWh, varies by utility	Follows its unit
Line loss adjustment	Multiplier on kWh	Yes — and it slightly <i>increases</i> savings, since avoided energy avoids its losses too
Smart metering entity charge	Fixed, about \$0.41/month	No
Rate riders	Mixed — and some are negative	Depends entirely on the unit. Read each one.

The single most important sentence in this guide. On a mid-size Ontario commercial bill, demand charges are frequently **40–60% of the delivery block**. Anyone modelling commercial solar off a blended cents-per-kilowatt-hour rate is overstating the saving, sometimes by a lot. If you take one habit from this document, take this one: **ask for twelve months of interval data, not twelve bills**. You need to know *when* each monthly peak happened.

kW, kVA and the "kW90" convention

Three terms, and the difference between them is worth real money.

- **kW (real power)** — the power that does work.

- **kVA (apparent power)** — real power plus reactive power, added as vectors. Always equal to or larger than kW.
- **Power factor** — kW divided by kVA. Motors, chillers, welders and old lighting ballasts drag it down.
- **kW90** — billing demand is the *greater of* measured kW, or 90% of measured kVA. In plain terms: you are billed on kW if your power factor is at or above 0.90, and on 90% of kVA if it falls below.

Which utility uses which

UTILITY	DEMAND BILLED ON
Toronto Hydro	Straight kVA — every general service and large use class
Hydro Ottawa	kW90
Hydro One	kW90
Alectra (Brampton zone)	\$/kW — no kW90 language found in the schedule checked
London Hydro, GrandBridge	\$/kW
Enova (Kitchener/Waterloo)	kW90
Elexicon	UNVERIFIED — pull the tariff before quoting

Note that **Retail Transmission is almost always billed on kW even where distribution is billed on kVA**. Toronto Hydro is the clearest example: distribution per kVA, transmission per kW. Two different determinants on the same bill.

Why a solar array dilutes its own demand saving

A PV inverter injects **real power at close to unity power factor**. It does nothing about the site's reactive draw. So when solar shaves real power, the reactive component stays put and the power factor gets *worse*.

Worked through: a site drawing 500 kW at 550 kVA has a power factor of 0.909, so it is billed on 500 kW. Solar shaves 100 kW at the peak interval. Real power falls to 400 kW, reactive is unchanged, so kVA only falls to about 461 — and power factor drops to 0.868. Under kW90 the billing determinant becomes 90% of 461 = **415 kW**, not 400. You delivered 100 kW of real reduction and were credited with 85.

Turn it into a sale, not an excuse. Pairing the array with power factor correction — capacitors, or a power-factor-capable inverter — is often what makes the demand saving real. That is a legitimate, honest upsell, and raising it yourself is the kind of thing an engineer remembers.

Block four — Regulatory charges

Small, province-wide, identical across utilities, and all volumetric — so solar reduces all of them.

CHARGE	RATE	SOLAR?
Wholesale Market Service	\$0.0041/kWh	Yes
Capacity Based Recovery (Class B)	\$0.0006/kWh	Yes
Rural or Remote Rate Protection	\$0.0006/kWh	Yes
Standard Supply Service admin	\$0.25/month fixed	No

Confirmed across three independent 2026 tariffs (GrandBridge, Alectra, London Hydro). Note: Toronto Hydro shows a single combined "Wholesale Market Service \$0.0047/kWh" — that is WMS plus one of the others bundled. Don't double-count it.

The Ontario Electricity Rebate — and why your prospect almost certainly doesn't get it

The OER is **23.5%** off the pre-HST subtotal, effective 1 November 2025 (up from 13.1%). It is automatic for accounts at or below **50 kW demand** or at or below **250,000 kWh per year**.

A general commercial or industrial customer above both thresholds does not receive the OER. That is essentially every solar prospect worth quoting. Do not apply a 23.5% haircut to their bill, and do not promise them one.

The exceptions, by self-declaration only: registered farm businesses, long-term care homes, multi-unit residential complexes, retirement residences, and mobile home parks.

Where it *does* apply — small commercial under the thresholds, and the declared categories above — it works against you: because the rebate is a percentage of a now-smaller bill, **solar savings are worth only 76.5 cents on the dollar**. Ignoring that overstates the saving on those accounts by roughly 30%.

What to assume for rate escalation

Build it by component. It is more accurate and far more credible than one blended number.

COMPONENT	SUGGESTED BASIS	
Commodity + GA combined	2.5–3.5%/yr	10-year RPP history runs 2.1–2.3%/yr, but nuclear refurbishment and rising carbon costs push forward
Distribution	3.0–3.7%/yr	OEB's 2026 inflation factor for distributors is 3.7%, less productivity and stretch factors
Transmission (RTSR)	3.0–3.5%/yr	OEB 2026 transmitter inflation factor 3.5%
Regulatory charges	0–2%/yr	Small and historically sticky

Blended recommendation: 3.0%, with 2.0% and 4.0% shown as sensitivities. You can defend 3.0% as sitting between the observed ten-year commodity trend and the OEB's current distribution inflation factor — and note that it is deliberately *below* the 29% single-year jump in RPP supply cost just observed for Nov 2025–Oct 2026.

Do not use the "71%" figure. It is circulating in Ontario solar marketing right now. It comes from a Power Advisory forecast of the *wholesale market price* rising from late 2025 to late 2026 — it is **not** a forecast that anyone's bill rises 71%. Using it that way misrepresents the source, and an energy manager will know.

3 Global Adjustment and the five hours

This is the centre of commercial solar in Ontario. If you understand nothing else deeply, understand this.

What Global Adjustment is

Ontario pays its generators under long-term contracts and regulated rates. It also runs a wholesale market where prices float. Global Adjustment is the difference — it covers the gap between what generators are guaranteed and what the market actually pays them, plus the cost of the province's conservation programs.

The mechanically important consequence: **GA moves inversely to the market price.** The total owed to generators is roughly fixed, so when market prices are high, GA falls; when market prices collapse, GA rises to fill the gap.

Forecast total GA for Nov 2025 – Oct 2026 is **\$7.55 billion**, about 84% of which is allocated to Class B.

How violently it moves — the actual numbers

These are IESO settled actuals, not forecasts. Learn the shape of this table; it is the best argument you have against any competitor who hardcodes a GA rate.

MONTH	GA ACTUAL (¢/KWH)	MONTH	GA ACTUAL (¢/KWH)
Jul 2025	1.44	Feb 2026	−3.28
Aug 2025	3.01	Mar 2026	7.27
Sep 2025	6.19	Apr 2026	9.91
Oct 2025	4.89	May 2026	9.95
Nov 2025	1.82	Jun 2026	8.41
Dec 2025	−0.29	Jul 2026	3.98
Jan 2026	−4.06	Range: −4.06¢ to +9.95¢	

Source: IESO Global Adjustment monthly reports. GA went negative for three consecutive months because the Ontario market price spiked — January 2026 averaged \$133.21/MWh.

Say this: "Global Adjustment swung from minus four cents to plus ten cents inside twelve months. Any proposal built on one month's number is going to look wrong within a quarter. We use a trailing twelve-month figure and we show you which one we used."

The practical rule. Quote savings against **commodity plus GA combined**, never against either alone. Individually they are wild; together they are reasonably stable, because they move in opposite directions. A proposal written off May 2026 (GA 9.95¢) shows roughly double the commodity-side saving of one written off January 2026 (GA −4.06¢), for the identical array.

Class B versus Class A

Class B customers pay GA as a volumetric rate — cents per kilowatt-hour. Simple. Solar reduces it one-for-one with every kilowatt-hour displaced. For most commercial prospects this is the single biggest solar-addressable line on the bill.

Class A customers do not pay a rate at all. They pay a *share* of the province's entire monthly GA bill, and their share is determined by one number.

The five hours

Peak Demand Factor = the customer's metered demand during Ontario's five highest-demand hours of the base period, divided by the province's total demand in those same five hours.

Monthly GA charge = total Ontario GA that month × that customer's Peak Demand Factor.

Read that again, because the implication is startling: **a Class A customer's entire annual Global Adjustment charge — often the largest line on their bill — is determined by their behaviour in five hours of the year.** Not five hours a month. Five hours, total.

The IESO picks those five hours after the fact, by looking back at when Ontario demand was highest. Historically they are hot summer weekday afternoons, roughly 3pm to 6pm, in June through August.

The timing that nobody explains properly

PERIOD	DATES	WHAT HAPPENS
Base period	1 May – 30 April	The five peak hours occur somewhere in here and are measured
3 May	—	IESO publishes system-wide totals for the base period
late May	by 31 May	Customers are told their Peak Demand Factor
1–15 June	—	Opt-in / opt-out window. Hard deadline 15 June.
Adjustment period	1 July – 30 June	The PDF is applied to bills throughout this year

Two consequences that break naive cash-flow models.

First, there is **no mid-year switch**. A customer who misses 15 June waits a full year. As you read this, the peaks that will set the July 2027 – June 2028 bills are being measured right now.

Second, there is a lag of **14 to 26 months** between a peak hour occurring and the bill it affects. Solar energised today does not touch a Class A customer's GA bill until 1 July of the following year at the earliest. Any model that starts GA savings in year one, month one, is wrong.

Who can be Class A

AVERAGE MONTHLY PEAK DEMAND	WHO QUALIFIES	MECHANISM
Over 5 MW	Everyone	Automatic — must opt out by 15 June
1 MW – 5 MW	All sectors	Opt in by 15 June
500 kW – 1 MW	Only NAICS 31, 32, 33 or 1114 — manufacturing, and greenhouses/nurseries/floriculture	Opt in by 15 June

Why solar's Class A benefit is smaller than competitors claim

Here is the honest version, and it is a better argument than the dishonest one.

A fixed south-facing array in Ontario is still producing meaningfully at 4pm and 5pm in July. So it *does* shave the peak demand factor. But two of Ontario's recent five peak hours fell in the **6pm–7pm** window, and by then a south-facing array is at roughly **29% of nameplate and falling**.

Calculators that assume solar simply erases the customer's peak-hour load overstate the Class A saving by **roughly double**. When a plant's engineer works that out for himself — and he will — every other number in your proposal becomes suspect.

The honest version sells better. Saying "your array covers about half the peak-hour load, and here is the hour-by-hour arithmetic" leads naturally to two upsells the dishonest version can't reach: **west-of-south orientation** (trading a little annual yield for peak-hour coincidence) and **battery storage**, which is the only thing that reliably covers a 6pm peak. Solar plus storage is the defensible Class A story. Solar alone is not.

Never say Class A is automatically better. For a flat-load site with little ability to shave peaks, Class A can cost *more* than Class B. Switching class is a separate decision from buying solar, and a cloudy afternoon on a peak day gives you nothing. Say that out loud — it is the line that makes an engineer trust you, and overselling it is the fastest way to lose a commercial deal in this province.

4 The fork: Save on Energy or net metering

Ontario forces a choice, and it is the first real decision in any commercial solar conversation. Getting it wrong wastes months.

A customer may take the Save on Energy incentive, or they may enter a net-metering agreement. Not both. Ever.

The Save on Energy program requirements make a project ineligible if the participant "is a party to a net-metering agreement and/or any other compensation agreement for any excess electricity" generated. The Participant Agreement itself prevents entering one. This is a hard legal rule, not a preference.

Branch A — Save on Energy Retrofit, load displacement

Rate	\$770 per kW-AC for systems above 10 kW-AC up to 1 MW-AC
Small systems	\$1,000 per kW-DC at 10 kW-DC and under (unchanged)
Size cap	Incentive calculated on the first 1,000 kW-AC only. Max possible incentive \$770,000 .
Cost cap	50% of eligible project costs
Eligible costs	Equipment, inverters, racking, third-party installation labour
Excluded	Own labour, service, admin, overhead, financing, insurance, and HST
Mounting	Rooftop and parking canopy only. Ground mount is excluded. Wall mount was removed 29 May 2026.
Obligation	Must operate for load displacement for the life of the system ; no export compensation
Timing	Application must be submitted before any binding commitment — before the contract is signed

Ground mount does not qualify. The Save on Energy solar measure covers rooftop and parking canopy only. If you are quoting a ground-mount or tracker system, there is no \$770/kW — and if your calculator applies it anyway, your net cost is wrong by up to \$770,000. See Part 10.

Regional adders do not apply to solar. Regional adders double the incentive for most non-lighting measures in constrained areas. **Solar PV DER is explicitly excluded.** Never quote a doubled solar incentive.

Branch B — Net metering, O. Reg. 541/05

What it does	Surplus generation flows to the grid and earns bill credits
What credits offset	Consumption (kWh) charges only. Not the service charge, not the smart meter charge, not fixed riders. Utilities differ on the detail — Hydro One allows offset of distribution volumetric, transmission, variable riders and line losses; confirm with the actual utility.
Expiry	Credits carry forward a maximum of 12 consecutive months , then go to zero
Cash-out	None. Ever. Utilities cannot pay for excess generation.
Incentive	\$0 — taking this branch forfeits Save on Energy entirely
Third-party ownership	Permitted since 1 July 2022 under O. Reg. 386/22 and 387/22 — leases, rentals, PPAs. Virtual net metering was deliberately excluded.

The 500 kW question — my two research passes disagreed, so treat it as open.

One line of evidence says the 500 kW output cap was removed by amendments in 2018. The stronger line says those amendments — O. Reg. 273/18 and 275/18 — were **revoked on 25 September 2018, before they ever came into force**, which would mean the cap survives. Neither pass could retrieve the verbatim text of O. Reg. 541/05, because e-Laws requires a browser and CanLII blocks automated access.

Before you quote a net-metered system above 500 kW, open e-Laws in a browser and read the section yourself, or ask the utility in writing. Do not cite a section number you have not read.

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How to choose, in one paragraph

Take **Save on Energy** when the site has a large, well-timed daytime base load that the array can serve directly — two-shift manufacturing, greenhouses, cold storage, distribution centres. The incentive is immediate cash and the customer consumes nearly everything they generate.

Take **net metering** when the load is small relative to the roof, or badly timed against the sun — a warehouse that runs nights, an office closed weekends — so that a load-displacement system would have to be sized uselessly small. You are trading the incentive for the ability to export.

Say this: "Ontario makes you pick. Take the seven-hundred-and-seventy-dollar-a-kilowatt incentive and the system runs for your own load for its whole life, with no export. Or take net metering, export the surplus for credits, and forfeit the incentive. Which one wins depends on your load shape, not on which sounds better — so let's look at your interval data."

Oversizing destroys value on either branch. On Save on Energy, export isn't permitted at all — generation above on-site load is simply wasted. On net metering, credits expire after twelve months, can never be cashed out, and cannot touch fixed or demand charges. There is no version of Ontario commercial solar where "cover the whole bill" is the right instruction.

5 The tax stack

On a taxable corporation this is worth more than the incentive. It is also where most proposals are quietly wrong, in the customer's favour — which is the dangerous direction.

The Clean Technology ITC

Rate	30% if labour requirements are met and elected; 20% if not
Refundable?	Yes, fully. Cash, not just a deduction.
Runs until	31 December 2033 at 30%; drops to 15% for 2034; nil after
Who can claim	Taxable Canadian corporations, and REITs that are mutual fund trusts. Sole proprietors and ordinary trusts cannot.
Property must be	New, situated in Canada, used exclusively in Canada
Not eligible	Permitting, design work, site preparation
Recapture tail	10 years — disposal, export or change of use claws it back

The labour requirements, plainly

Two conditions, both about the people on site:

- **Prevailing wage** — covered workers paid per an eligible collective agreement, or equivalent wages and benefits where none applies.
- **Apprenticeship** — reasonable efforts so registered Red Seal apprentices work at least **10% of total Red Seal hours** at the site.

You must both **elect and attest** when filing. Failing to elect at all costs a flat ten percentage points — 30% becomes 20%. Electing and then breaching carries per-day and per-hour additions to tax.

Default to 20% in a proposal unless the customer has confirmed they will meet the labour conditions. Twenty percent is the safe number. If they meet the conditions, the project gets better than you promised. That is the right direction for a surprise to run.

Capital cost allowance — and the trap

- **Class 43.2 (50%) is closed.** It applies only to property acquired before 2025. Anyone quoting "Class 43.2, 50%" is quoting a dead rule.
- **A 2026 solar project is Class 43.1, 30% declining balance.**
- **Immediate expensing — 100% in year one — is back,** enacted by Bill C-15 (Royal Assent 26 March 2026), for property acquired on or after 1 January 2025 and available for use before 2030. It phases down

for property available for use 2030–2033.

- Ontario mirrors the federal treatment, confirmed in the 26 March 2026 Ontario Budget.

The order of operations — get this right or the number is wrong

1. Start with total capitalised cost, **excluding recoverable HST**.
2. **Subtract the Save on Energy incentive.** Government assistance reduces the capital cost of depreciable property by statute. This is not optional.
3. Compute the ITC on that *reduced* cost.
4. **The ITC then reduces undepreciated capital cost in the FOLLOWING tax year** — not the same year.
5. Where immediate expensing has already driven UCC to nil, step 4 pushes it **negative**, producing **recaptured depreciation — taxable income in year two**.

Step 5 is the trap, and it is routinely omitted from Ontario solar proposals. The year-two recapture is real money. A CFO who finds it after signing will not be forgiving.

Worked example — a \$1,500,000 project

750 kW-AC rooftop, taxable Canadian corporation, Ontario general combined rate 26.5%, labour requirements met, in service 2026, no other property in the Class 43.1 pool.

Eligible project cost, excluding HST	\$1,500,000
Less Save on Energy — 750 kW × \$770 (under the 50% cap)	–\$577,500
Capital cost for tax purposes	\$922,500
Less Clean Technology ITC at 30% of that, refundable	–\$276,750
Net cost after cash grant and credit	\$645,750
Year 1 — immediate expensing of \$922,500, tax saved at 26.5%	–\$244,463
Year 2 — ITC drives UCC negative, recapture income of \$276,750, taxed at 26.5%	+\$73,339
Net after-tax cost	≈ \$474,626

That is about **31.6% of gross** — an effective reduction of roughly 68%. Which is a genuinely strong number, and you do not need to inflate it.

The four caveats that go with it

- **HST is a working-capital line.** 13% on \$1,500,000 is \$195,000 out the door and recovered on the next return. Real cash, briefly.
- **The year-one benefit only exists if there is taxable income to shelter.** A loss corporation gets a carryforward, not cash.
- **Without the labour election** the ITC falls to 20% — \$184,500 — and net after-tax cost rises to roughly \$542,700.
- **Structure matters.** If the project sits in a holdco, a partnership, or a landlord entity recharging tenants, the *specified energy property* rules can neutralise the year-one deduction entirely. Escalate to a tax advisor.
UNVERIFIED for owner-occupier carve-outs.

Three sentences that will keep you honest

1. **Never quote 30% of gross cost.** The Save on Energy incentive comes off the capital cost first, by statute. 30% of gross is the most common overstatement in Ontario solar quoting.
2. **Never quote Save on Energy and net metering in the same proposal.** They are legally exclusive.
3. **Never promise the ITC to a sole proprietor.** They cannot claim it.

Carbon pricing — say less than you want to

The federal fuel charge was set to **zero on 1 April 2025** and all accounts were cancelled on 1 November 2025. That removed the "avoided carbon cost" line from every Ontario solar business case.

Industrial carbon pricing survives as Ontario's **Emissions Performance Standards**, but it covers **direct point-source emissions** at large facilities. Displacing grid electricity is a Scope 2 reduction — it does not reduce a facility's covered emissions, and Ontario's EPS **accepts no offsets at all**. The federal offset system has no solar protocol.

What you may legitimately say: solar cuts purchased grid electricity and therefore electricity cost, and gives the customer a defensible Scope 2 reduction for corporate and supply-chain reporting. **What you must not say:** that it generates a saleable carbon credit, or reduces an Ontario EPS compliance obligation. It does neither. **UNVERIFIED** — confirm with the Ministry before putting this in writing to a covered emitter.

6 Permits, approvals and the utility

Nothing here wins you a deal. All of it can lose you one — either because you promised something that wasn't true, or because a project you sold turned out to be impossible.

The sequence, from signature to switch-on

Two chains run at once. The utility chain cannot be compressed; the building chain runs alongside it.

Utility chain (sequential — this is the critical path)

Feeder capacity check → Preliminary Consultation → Connection Impact Assessment → Offer to Connect → Connection Cost Agreement → construction → ESA final inspection → **ESA Connection Authorization** → meter exchange → energization

Building chain (parallel — start it the day the contract is signed)

Structural engineering → municipal building permit → roof works → ESA Notification of Work → ESA plan review

The hard gate at the end is statutory: the customer cannot be energized until the utility has confirmation that the **Electrical Safety Authority has issued the authorization to connect**.

Step one, always: is there room on the feeder?

Check feeder capacity before the customer spends a dollar on design. This is the single most project-fatal item in Ontario, and it is free to check. Toronto Hydro, Hydro One and Hydro Ottawa all publish capacity maps or lookup tools.

A **restricted feeder** at Toronto Hydro "has no additional short-circuit capacity and we're currently unable to host DERs at this location." Their list is refreshed only every three months. Hydro One's map is monthly, and they warn explicitly that the nearest feeder is not necessarily the one you'd connect to.

Say this when a feeder is full: "The feeder your building sits on has no capacity for new generation right now. Your options are to wait for the restriction to lift, pay for system reinforcement through the connection agreement, redesign smaller, or go non-exporting. There is no appeal that creates capacity. I'd rather tell you that now than after you've paid for engineering."

Which category is the project in?

This determines the assessment timeline, the fee, and the insurance the customer must carry. And it does **not** depend on system size alone.

CATEGORY	THRESHOLD
Micro-embedded	12 kW or less (raised from 10 kW on 1 May 2026)
Small embedded	Up to 500 kW on a feeder under 15 kV ; up to 1 MW on 15 kV and above
Mid-sized embedded	Above those, up to 10 MW
Large embedded	Above 10 MW

Feeder voltage matters as much as system size. A 600 kW system on a 27.6 kV feeder is *small*. The identical 600 kW on a 13.8 kV feeder is *mid-sized* — which changes the customer's required liability insurance from \$1M to \$2M and changes the assessment fee. Never tell a customer their category without knowing the feeder voltage.

Connection Impact Assessment — time and money

FACILITY	NO REINFORCEMENT	ANOTHER UTILITY INVOLVED	REINFORCEMENT NEEDED
Small	60 days	75 days	90 days
Mid-sized	60 days	75 days	—
Large	90 days	105 days	—

Source: OEB DER Connection Procedures v3, effective 1 May 2026. Note the OEB's own public CIA-timeline web page is flagged as outdated — cite the Procedures document, not that page.

Preliminary consultation gets a 15-day response, and reserves nothing. Capacity is only reserved on successful completion of the CIA. Say that plainly: "preliminary consultation is a look, not a hold."

CIA fees vary about fourfold between utilities

UTILITY	REPRESENTATIVE FEES
Toronto Hydro	50–250 kW \$2,000 · 250 kW–1 MW \$2,500 · 1–10 MW \$12,000 (plus HST)
Alectra	50–500 kW \$2,825 · under 1 MW \$4,520 · 1–10 MW \$6,780
Hydro One	Small projects to 500 kW \$3,848 · capacity allocation required \$10,183 · add \$10,000 if another utility is involved
Hydro Ottawa	Small to 500 kW \$1,130 · medium 500 kW–10 MW \$5,368

Hydro One's schedule dates to January 2022 and Alectra's to September 2022 — both are the current published versions, but confirm by phone before putting a number in writing. **Never quote a generic "Ontario CIA fee."**

The Electrical Safety Authority

A **Licensed Electrical Contractor** must file the Notification of Work. Electrical contracting for another party requires a licence — this is not optional and not a formality.

ITEM	FEE
Solar, over 10 kW to 250 kW	\$917
Solar, 251–500 kW	\$2,292
Solar, 501 kW and above	\$4,580 per MW
Plan review — mandatory above 12 kW	\$350 first two hours, then \$175/hr
Re-inspection, defect corrected / uncorrected	\$89 / \$177

ESA 2026 Wiring Fee Guide, effective 6 July 2026. Fees rose 1.9% on 1 April 2026.

Those are the panel-rating fees only. Inverters, disconnects, combiners, transformers and the service connection are all priced separately. **Quote a range and say the components are priced separately** — never give a customer one flat ESA number.

The Connection Authorization is valid for up to six months. This is the item most often on the critical path at the end of a project: if the utility's meter crew is booked past that window, the authorization lapses and you

start that piece again.

Building permit and structural

A building permit is required for any building-mounted solar collector with a face area of **5 m² or more**, counted in aggregate. Every commercial array is far over that. **Rooftop commercial solar always needs a building permit.** Free-standing ground mount generally does not — but zoning still applies.

The structural submission must be by a **Professional Engineer licensed in Ontario**, and must show the roof can carry the array including **wind uplift, snow accumulation and anchorage**, with a Commitment to General Review form.

Ballasted versus penetrating — the honest framing

This is an engineering decision, not a way around anything. Neither method avoids the permit or the structural review.

Ballasted adds significant dead load across the roof and resists uplift by weight and friction. On older or lightly-framed industrial roofs that added dead load is frequently the binding constraint, and it can force structural reinforcement.

Penetrating transfers uplift directly into the structure and usually adds less dead load, but creates penetrations that can affect the roof membrane warranty and need flashing details coordinated with the roofer.

Three things you must never say about a ballasted system: that it doesn't need engineering, that it doesn't need a permit, or that it won't affect the roof warranty. Roof warranty treatment is between the owner and the membrane manufacturer, and no regulation governs it. **UNVERIFIED**

Roof age is a commercial risk item, not a regulatory one. No provincial rule requires a roof condition assessment. But remaining membrane life should exceed the array's life, or the owner is accepting the future cost of removing and reinstalling it. Raise it before they do.

Ground mount — a different world

SIZE	WHAT IS REQUIRED	FEE
10 kW or less	Neither REA nor EASR	—
Over 10 kW to 500 kW	EASR registration, if the land qualifies — max 4 ha on industrial/commercial/institutional land, or 3 ha on farm land outside settlement areas; 15 m setback from property boundaries, 30 m from water; 30 days' notice to neighbours and the municipal clerk	UNVERIFIED
Over 500 kW, or land fails the criteria	Full Renewable Energy Approval under O. Reg. 359/09	\$1,000 at 500 kW or under; \$12,844 above (\$8,990 refundable)

Rooftop is exempt from REA regardless of size. REA applies to Class 3 ground-mounted facilities, and Class 3 is defined by location — anywhere other than a wall or roof.

Municipal planning authority over renewable siting was restored in 2019, and the provincial setback regulation was revoked in 2021. **Ground-mount siting is now entirely a local matter** — zoning compliance, possibly a zoning amendment or minor variance, and site plan control. This is the most schedule-variable approval in the entire pathway and there is no provincial backstop.

Also possible for ground mount: conservation authority permission near wetlands or watercourses; the Species Conservation Act registration (which replaced the Endangered Species Act on 30 March 2026); and **NAV CANADA land use review near an aerodrome — typically 8 to 12 weeks, but up to 12 to 18 months where mitigations are required.** Discovering that late will destroy a schedule.

Fire safety and rapid shutdown

Rapid shutdown is mandatory, and it is an electrical requirement, not a fire code one. PV conductors more than a metre long on or inside a building must drop to no more than 30 V within 30 seconds, with a manual initiator at the roof access point or within 9 m of the arrays.

Do not tell a customer Ontario mandates three-foot fire access pathways. That is a US International Fire Code concept. Ontario's Firefighter Guidance Note 6-34 is guidance, not regulation, and contains no setbacks or access pathway requirements. Some municipalities impose access conditions through site plan or building permit — check with the local fire prevention office and the Chief Building Official.

UNVERIFIED as a provincial requirement

Insurance, and what counsel will ask

Small embedded facility	Commercial general liability not less than \$1,000,000 per occurrence and in the annual aggregate
Mid-sized embedded facility	Not less than \$2,000,000

A certificate of insurance must be provided **before** the connection agreement is executed. The 2026 amendment exempting residential customers does **not** apply to commercial or industrial.

Never let a customer conflate approvals with performance. ESA and the utility certify *safety and grid compliance*. Neither certifies yield, output or equipment quality. An ESA Connection Authorization is not a performance guarantee, and any performance promise you make is contractual only.

Does the IESO get involved?

For a behind-the-meter commercial project connecting to the local utility — **generally no**. The utility is the counterparty.

One threshold catches larger projects: wind and solar at **5 MW or greater installed capacity** must register with the IESO for centralized forecasting, which carries a real telemetry obligation — data reported **every 30 seconds**. The published document does not explicitly address behind-the-meter facilities. **UNVERIFIED** — for anything near 5 MW, get written confirmation from the IESO before designing.

7 Timeline, and what actually goes wrong

The honest number

Summing only the *published regulatory maximums* for a 500 kW rooftop project — preliminary consultation 15 days, CIA 60 to 90 days, agreement execution, 15 working days' commissioning notice — gives roughly **4 to 6 months of pure approvals time**, assuming nothing goes wrong and the customer signs immediately.

A realistic end-to-end range is 9 to 18 months from signed contract to energization. The 4–6 month regulatory core is verified. The balance is customer decision time, engineering, procurement, construction, weather and utility crew scheduling — none of which have published timelines.

Present 9–18 months as an estimate, never as a commitment. The only durations you may state as facts are the regulatory ones, and even those are maximum *response* times for the utility, not guarantees of project completion.

What goes wrong, in the order it actually bites

1. **Feeder capacity.** Discovered at preliminary consultation or CIA. Can be fatal, not merely slow. Check it first, always.
2. **The CIA finds reinforcement is needed.** Adds 30 days to the study, plus the reinforcement construction itself, plus cost exposure above the renewable expansion cost cap.
3. **Another utility gets involved.** Adds 15 days. Common where the local feeder originates at a Hydro One transmission station — which can trigger a separate Hydro One assessment at additional cost.
4. **Structural surprises.** The roof can't carry the ballast. This is the most common *silent* delay, because it happens before the permit is even filed.
5. **Expiring windows.** The CIA expires, the Offer to Connect expires (60 days at Toronto Hydro), the ESA authorization expires (6 months), the building permit expires (12 months, work must start within 6). Missing any means re-application and re-payment — Alectra charges \$565 for a same-design re-CIA, \$1,130 for a revised design.
6. **Equipment substitution after CIA approval.** Changing inverters can force a re-CIA. **Lock the bill of materials before the CIA is submitted.**
7. **Municipal zoning and site plan** — ground mount only, but effectively unbounded when it applies.
8. **Utility meter and crew scheduling at the very end.** No published timeline anywhere. This is where the six-month ESA authorization window quietly gets consumed.

8 Questions you will be asked

Short, safe answers. Where the honest answer is "it depends," say so and say on what.

"How much of my bill does this actually eliminate?"

Typically around a fifth on a commercial site, not all of it. Solar removes the per-kilowatt-hour charges. Your service charge is fixed, your demand charges depend on when your peak happens, and transmission is billed on demand too. I'd rather show you which lines move and which don't than quote you a number that falls apart when your CFO opens the bill.

"Do I need a building permit?"

Yes, for any rooftop or wall array — the trigger is 5 m² of face area and every commercial system is far over it. Free-standing ground mount generally doesn't need one, but it does need to comply with municipal zoning.

"Do I need a Renewable Energy Approval?"

Not for rooftop, regardless of size. That applies to ground mount over 10 kW. Between 10 and 500 kW you may be able to register through the EASR if the land qualifies; above 500 kW, or if the land doesn't qualify, it's a full REA — \$1,000 up to 500 kW, \$12,844 above.

"How long will the utility take?"

They must respond to preliminary consultation within 15 days. The Connection Impact Assessment is 60 days with no reinforcement, 75 if another utility has to assess, 90 if reinforcement is needed. Those are code maximums for the study — not for the whole project.

"What if my feeder is full?"

Then it's full. Wait for the restriction to lift, pay for reinforcement, redesign smaller, or go non-exporting. There's no appeal that creates capacity — which is exactly why we check before you spend anything on design.

"Is 500 kW small or mid-sized?"

Depends on your feeder voltage, not just the system size. Under 15 kV, small is up to 500 kW. At 15 kV and above, small goes to 1 MW. It matters because it changes your required liability insurance from one million to two, and it changes the assessment fee. I'll confirm your feeder voltage before I quote.

"Can I take the incentive and net metering?"

No. They're legally exclusive. The Save on Energy program makes you ineligible if you're party to a net-metering agreement, and the participant agreement prevents you entering one. You pick the branch that suits your load shape.

"So it's 30% off from the federal credit?"

Thirty percent of the cost *after* the provincial incentive is deducted — government assistance reduces the cost base by statute, so it's never 30% of the sticker price. And it's 30% only if the labour requirements are met and elected; otherwise 20%. I model 20% unless you tell me you'll meet them.

"Do I get carbon credits for this?"

No. The federal fuel charge went to zero in April 2025. Ontario's industrial system covers direct emissions at the facility, and displacing grid electricity doesn't reduce those — and Ontario accepts no offsets at all. What you do get is a defensible Scope 2 reduction for your own reporting and your customers' supply chain questions.

"Will this void my roof warranty?"

That's between you and your membrane manufacturer, and I won't promise you either way. What I will do is have the engineer specify the attachment method and coordinate the flashing details with your roofer, and get the manufacturer's position in writing before we touch the roof.

"When will it actually be turned on?"

The regulated approval clock alone is about four to six months. Adding engineering, procurement, construction and utility crew scheduling, a realistic range is nine to eighteen months. I'll be straight with you: only the regulatory durations are published — the rest is estimate. The biggest risk to that schedule is feeder capacity, which is why we run preliminary consultation first.

9 Things you must never say

Each of these is currently circulating in Ontario solar marketing. Each is false or unsupportable, and each is the kind of thing a plant engineer or a CFO catches.

NEVER SAY**BECAUSE**

"Solar will eliminate your hydro bill"	It removes roughly a fifth of a commercial bill. Fixed and demand charges stay.
"You'll get 30% back from the federal government"	30% of cost <i>after</i> the provincial incentive is deducted, and only with the labour election.
"You can take the incentive and net meter"	Legally exclusive.
"There's a regional bonus on the solar incentive"	Solar PV DER is explicitly excluded from regional adders.
"The Save on Energy budget is about to run out"	No published allocation clause, no queue, no funds-exhausted provision. Sell the review cadence instead — the rate has been cut, and it is reviewed roughly twice a year.
"Electricity prices are going up 71%"	That is a wholesale market price forecast, not a bill forecast. Misusing it is audit-fail material.
"Switching to Class A will save you money"	Not always. For a flat-load site it can cost more. It's a separate decision from buying solar.
"Class 43.2 gives you 50% depreciation"	Class 43.2 closed for property acquired after 2024. It's Class 43.1 now — with immediate expensing, which is better anyway.
"A ballasted system doesn't need engineering or a permit"	Both are required regardless of attachment method.
"Ontario requires three-foot fire access pathways"	US fire code concept. Ontario's guidance note contains no such requirement.
"You'll earn carbon credits"	No solar protocol federally; Ontario's system accepts no offsets.
"We'll have you energized in six months"	Only the study durations are published. Nine to eighteen is the honest range.

The general principle. Every one of these overstatements makes the proposal look better and the salesperson look worse the moment it's checked. In commercial, it always gets checked — by an engineer, an energy manager, or a CFO. Volunteering the unflattering number first is not modesty, it is the most effective credibility move available to you, and it is the entire design philosophy of the calculator.

10 Two corrections for the calculator

This research turned up two places where the calculator and the current rules disagree. Both are in the direction that overstates the customer's benefit, which is the direction that matters.

1 · Save on Energy is applied to mounting types that don't qualify

The Save on Energy solar measure covers **rooftop and parking canopy only**. Ground mount is excluded, and wall mount was removed from eligibility on **29 May 2026**.

The calculator's `soeIncentive()` function computes \$770/kW-AC from system size and the cost cap alone — it never looks at the mounting type. So selecting **Ground mount — fixed** or **Ground mount — 1-axis tracker** still credits the full incentive, up to \$770,000 that the project would not receive.

The three roof options and Solar carport are fine — a carport is a parking canopy and qualifies. The fix is a mounting-type check inside `soeIncentive()` that returns zero for ground and tracker, with a visible explanation on the Incentives tab rather than a silent zero. Say the word and I'll patch it.

2 · The net-metering size cap is genuinely unresolved

My two research passes reached opposite conclusions on whether the 500 kW output cap in O. Reg. 541/05 still exists. The stronger evidence says it does — the 2018 amendments that would have removed it were revoked before they came into force. Neither pass could read the regulation itself, because e-Laws needs a browser.

The calculator doesn't currently assert a cap either way, which is the safe position. Leave it there until you've read the section yourself. **If the cap does exist, any net-metered system above 500 kW you quote is not permissible** — that is worth half an hour with e-Laws open.

Everything else checked out. The \$770/kW-AC rate and its 30 June 2026 effective date, the 1,000 kW-AC and 50% caps, the net-metering-versus-incentive exclusivity, the 12-month credit expiry, Class 43.1 at 30% with immediate expensing under Bill C-15, the Clean Technology ITC sequence including year-two recapture, the Ontario Electricity Rebate cutting off at 50 kW, the Class A thresholds and NAICS codes, and the five-peak-hour mechanics — all match current primary sources.

11 Quick reference card

The numbers you should be able to produce without looking anything up. Print this page if you print nothing else.

Money

Save on Energy, over 10 kW-AC to 1 MW-AC	\$770/kW-AC (cut from \$860 on 30 Jun 2026)
Save on Energy caps	1,000 kW-AC · 50% of eligible cost · max \$770,000
Save on Energy eligible mounting	Rooftop and parking canopy only
Clean Technology ITC	30% with labour election, 20% without · refundable · to 2033
ITC recapture tail	10 years
Capital cost allowance class	43.1 , 30% declining · 100% immediate expensing to 2029
HST	13%, recoverable — a working-capital item, not a cost
Ontario Electricity Rebate	23.5% — but not above 50 kW / 250,000 kWh

The bill

Wholesale Market Service	\$0.0041/kWh — solar reduces
Capacity Based Recovery (Class B)	\$0.0006/kWh — solar reduces
Rural or Remote Rate Protection	\$0.0006/kWh — solar reduces
Standard Supply Service admin	\$0.25/month — solar never touches
Global Adjustment range, last 12 months	−4.06¢ to +9.95¢/kWh
Rate escalation to assume	3.0% , with 2% and 4% sensitivities

Class A

Peaks that set the whole GA bill	Five hours per year
Base period	1 May – 30 April
Election window	1–15 June, hard deadline
Adjustment period	1 July – 30 June
Lag from peak to bill	14 to 26 months
Over 5 MW	Automatic — must opt out
1–5 MW	Opt in, any sector
500 kW – 1 MW	Opt in, only NAICS 31/32/33/1114

Connection and approvals

Preliminary consultation response	15 days — reserves nothing
CIA, no reinforcement	60 days
CIA, another utility involved	75 days
CIA, reinforcement needed	90 days
Small embedded	≤500 kW under 15 kV · ≤1 MW at 15 kV+
Liability insurance	\$1M small · \$2M mid-sized
ESA, 10–250 kW / 251–500 kW / 501 kW+	\$917 / \$2,292 / \$4,580 per MW — panel rating only
ESA plan review, above 12 kW	\$350 + \$175/hr
ESA Connection Authorization validity	6 months
Building permit trigger	5 m ² face area — always for commercial rooftop
REA, ground mount over 500 kW	\$12,844 (\$8,990 refundable)
Realistic end-to-end	9–18 months — estimate, not a promise

The three sentences that keep you out of trouble

1. **Never 30% of gross.** The provincial incentive comes off the cost base first, by statute.
2. **Never the incentive and net metering together.** They are legally exclusive.
3. **Never promise Class A is better.** It's a separate decision, and for a flat-load site it can cost more.

Where these numbers came from

Primary sources throughout: the IESO (Global Adjustment reports and settlements, ICI backgrounder, Market Renewal documentation, Class A eligibility, centralized forecasting requirements); the Ontario Energy Board (Distribution System Code and DER Connection Procedures, RPP price reports and wholesale forecasts, net metering guidance, standard connection agreements, historical rates, inflation parameters); published 2026 tariffs from Toronto Hydro, Hydro Ottawa, Hydro One, Alectra, London Hydro, GrandBridge and Enova; the Electrical Safety Authority (2026 Wiring Fee Guide, notification and inspection rules, Bulletin 64-6-4); Save on Energy program requirements and 2026 program change notices; CRA and Justice Canada for the Clean Technology ITC and the Income Tax Act; NRCan for Class 43.1; and ontario.ca and the Environmental Registry for Renewable Energy Approvals, EASR and the Emissions Performance Standards.

Two documents change often enough that you should re-check them before every proposal: **the utility's own fee schedule and restricted-feeder list**, and the **ESA Wiring Fee Guide**. And check the Save on Energy rate — it has been revised roughly twice a year, and the direction of travel for solar has been downward.

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Researched and written 19 August 2026. This is a sales reference, not legal, engineering or tax advice. Anything tagged UNVERIFIED must be confirmed against a primary source before it is said to a customer or put in writing.