COMMENTS OF KEN STEPPS ON STORAGE FOR ALL PROGRAM DEVELOPMENT

Response to Request for Information #1 — Clean and Reliable Grid Affordability Act (CRGA)

TO:	Illinois Power Agency (IPA) — Submitted via `IPA.Storage@illinois.gov`
SUBJECT:	**Ken Stepps Response – Storage For All RFI -- Sept2026**
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EXECUTIVE SUMMARY & FOUNDATIONAL ENGINEERING PRINCIPLE

As the Illinois Power Agency (IPA) evaluates and designs the **Storage for All** program pursuant to Section 1-56(b)(3) of the IPA Act as amended by the *Clean and Reliable Grid Affordability Act (CRGA)*, program architecture must center on a foundational engineering, equity, and consumer-protection principle: **energy audits and building envelope integrity must precede or directly integrate into solar and stationary storage sizing.**

Income-qualified households and environmental justice (EJ) communities disproportionately occupy older, inefficient housing stock. Sizing stationary lithium-ion batteries against historical utility bills without verifying the thermal boundary forces scarce ratepayer capital to finance oversized chemical storage simply to power structural air infiltration. Furthermore, during a winter outage, an unsealed home loses heat at 3°F to 5°F per hour, exhausting a 13.5 kWh battery bank within 4 to 6 hours. Conversely, an envelope sealed and insulated after a diagnostic audit acts as a passive *thermal battery*, maintaining indoor temperatures and tripling battery runtime to 24+ hours.

> *"Requiring that homes utilize rebates for insulation and air sealing prior to installing heating and cooling upgrades, unless they are already appropriately insulated and sealed to a DOE approved, state-specified level, to ensure upgrades do not increase consumer energy costs."*
>
> **— U.S. Department of Energy, Home Energy Rebates Program Notice 26-2**

Applying DOE Program Notice 26-2 to distributed generation and storage reduces total gross project capital by over **$13,200 per household**, enabling the statutory ~$7.6 million annual budget ceiling to serve significantly more Illinois families while delivering dependable life-safety resilience.

STAKEHOLDER QUALIFICATIONS, FIELD VERIFICATION & CEJA WORKFORCE CONTEXT

This submission is informed by sixteen years of field diagnostics, quality assurance oversight, and accredited building performance training across northern and central Illinois:

- **Residential Field Auditing Since 2010:** Insight Building Consulting has conducted diagnostic energy assessments across Illinois since 2010. Our recommendations reflect empirical data from thousands of field blower-door tests, infrared scans, and duct pressurization tests in single-family and multifamily housing.

- **Utility HES QA/QC Inspection Authority:** Insight Building Consulting was awarded two 3-year contracts as the independent QA/QC inspection firm for the major Illinois electric and gas utility Home Energy Savings (HES) programs. We directly inspect, verify, and enforce installation quality, combustion safety, and modeled savings delivered by participating trade allies.
- **Utility Workforce Development (WFD) & MDI Training:** Insight Building Consulting has delivered Building Analyst Technician (BA-T), Building Analyst Professional (BA-P), and Air Leakage Control Installer (ALCI) certification trainings for both ComEd and Nicor Gas under their Market Development Initiative (MDI) programs.
- **CEJA Workforce Training in Environmental Justice Communities:** We are currently conducting BPI Air Leakage Control Installer (ALCI) training cohorts in partnership with Revolution Workshop in Chicago's Roseland community—a designated CEJA subgrantee under the Chicago Cook Workforce Partnership.

Illinois already possesses an expanding, CEJA-funded labor pipeline of certified diagnostic technicians. Requiring an energy audit will not create a contractor bottleneck; rather, it directly fulfills CRGA's statutory mandate to coordinate storage deployment with Illinois clean energy job training programs.

RESPONSES TO SPECIFIC STAKEHOLDER QUESTIONS

1. Program Funding & Appendix A Assumptions (Questions 1 & 2)

Recommended Rollout: The IPA should allocate **10% to 15%** of eligible ILSFA subprogram funds in Year 1, ramping up to the full 25% statutory ceiling (~$7.6 million) in subsequent program years as Approved Vendor (AV) capacity, certified energy auditor partnerships, and utility interconnection pipelines mature.

Critique of Appendix A Hardware Assumptions: In Appendix A, the IPA assumes an average residential storage project cost of ~$15,000 and a net incentive cost of ~$10,000 per site, relying on a 13.5 kWh / 11.5 kW configuration (modeled on the Tesla Powerwall 3). While the Powerwall 3 holds strong market share, assuming this single size for all income-qualified residences represents an over-sizing risk if the building envelope is neglected. Pairing Storage for All with an **$850 diagnostic energy audit** and weatherization reduces critical winter space-heating load so that a single 13.5 kWh unit easily delivers 24+ hours of autonomy, whereas an un-weatherized home requires two units (27 kWh) to survive the same event.

2. Integration with the Illinois Solar for All Program (Question 3)

The IPA should establish two distinct pathways for participating projects:

- **Track 1: Co-Located New Installations (Synchronized Sizing):** Approved Vendors submit a joint ILSFA solar + Storage for All application. Storage incentive approval occurs concurrently with Part I solar approval, conditioned upon a post-audit ACCA Manual J / BPI-2400 load calculation. This ensures the PV array and battery bank are right-sized together, preventing oversized solar and storage commitments.
- **Track 2: Retrofits for Existing ILSFA Solar Customers:** Existing ILSFA solar homes should be eligible to add storage, but must undergo an envelope screening. If the home has high air leakage, the vendor must coordinate air sealing or mandate a Critical Load Panel (CLP) to isolate essential circuits, preventing pre-existing thermal drafts from immediately draining the retrofitted battery.

3. Program Focus & Project Selection Criteria (Questions 4 & 5)

Storage for All should not focus on raw storage headcount at the expense of performance. It should adopt a dual focus: **Household Energy Resilience & Disaster Preparedness paired with Long-Term Bill Affordability.** Selection scoring should award priority points for: (1) Environmental Justice Communities and storm-outage-vulnerable feeders; (2) Dwellings with verified building envelope integrity (or applications bundling weatherization); and (3) Households with documented medical electrical baseline needs.

4. Incentive Mechanism: Upfront Grant vs. REC Adder (Questions 6 & 8)

A **one-time upfront rebate or grant** is the only viable mechanism for low-income residential storage. An ongoing REC adder creates financing barriers for low-income households who cannot monetize tax credits or secure private capital. An upfront grant covers capital expenditure directly and fulfills the statutory "zero upfront cost" mandate. To ensure long-term performance, Approved Vendors should be required to provide a 10-year workmanship and capacity warranty (minimum 70% retained capacity) and participate in a 5% to 10% independent QA/QC sample inspection before final grant disbursement.

5. Project De-linking in Case of Dropouts (Question 7)

If site conditions (e.g., severe electrical service limitations or physical space constraints) prevent battery installation after approval, the solar installation must **not** be penalized or cancelled. The ILSFA solar project should proceed unimpeded, and the unused storage allocation should return to the program pool.

6. Protecting the 50% Savings Requirement & Panel Upgrades (Questions 9 & 11)

Many older homes in Illinois EJ communities have 60A or 100A electrical service panels. Adding solar and storage routinely triggers a $3,000 to $5,000 service panel upgrade. Sizing systems post-audit and mandating smart circuit-shedding devices or smart critical-load panels avoids costly service drop replacements, protecting the zero-cost guarantee. Furthermore, because residential ILSFA relies on no-cost leases, adding storage must never introduce monthly battery lease fees that erode the 50% solar bill savings.

7. Empirical Financial & Resilience Comparison

The table below evaluates capital expenditure trade-offs on a standard 2,200 sq. ft. single-family home in Illinois (Climate Zone 4/5):

System & Financial Metric	Baseline: Storage Without Audit	Recommended: Audit & Weatherization	Variance / Savings
Diagnostic Energy Audit (BPI/RESNET)	$0	**$850**	+$850
Air Sealing & Attic Insulation Retrofit	$0	$5,500	+$5,500
Co-Located Solar PV Nameplate Sizing	10.5 kW-DC	7.2 kW-DC	**-3.3 kW (-31.4%)**
Gross Solar PV Capital Cost (@ $2.90/W)	$30,450	$20,880	-$9,570
Storage Capacity (24-hr Resilience)	27.0 kWh (2 units)	13.5 kWh (1 unit)	**-13.5 kWh (-50.0%)**
Gross Storage Capital Cost (@ $10,000/unit)	$20,000	$10,000	-$10,000
Total Gross Capital Cost	**$50,450**	**$37,230**	**-$13,220 (-26.2%)**

System & Financial Metric	Baseline: Storage Without Audit	Recommended: Audit & Weatherization	Variance / Savings
Cost to Ratepayer / Program Funds	High subsidy per site	Optimized subsidy allocation	Maximizes reach
Critical Backup Duration During Cold Snap	**< 10 Hours**	**24+ Hours**	**+140% Autonomy**

8. Avoiding Double Counting & Incentive Stacking (Questions 14 & 15)

Double-counting protections must distinguish between capital cost stacking and ongoing performance payments. Storage for All grants should cover the net equipment and installation cost after accounting for utility storage rebates ($300/kWh under ComEd/Ameren tariffs) and federal tax credits/direct pay (IRA Sec 48/25D). Total combined upfront incentives should be capped at 100% of actual installed cost. Ongoing Virtual Power Plant (VPP) grid-service revenues should be treated separately from upfront installation grants.

SUMMARY OF SPECIFIC POLICY RECOMMENDATIONS FOR PROGRAM RULES

1. **Audit & Envelope Gateway:** Condition storage eligibility on verification of thermal boundary performance via an $850 diagnostic audit allowance, mirroring DOE Program Notice 26-2.
2. **Storage Readiness Adder:** Authorize dedicated barrier-mitigation adders within Storage for All to cover electrical panel upgrades and air sealing.
3. **Post-Weatherization Sizing:** Prohibit battery sizing based solely on 12-month utility bills; mandate modeled critical load sizing and critical load subpanels.
4. **Quality Assurance & Verification Protocol:** Establish an independent QA/QC verification protocol (sampling 5–10% of installations) modeled on utility HES standards to verify critical load wiring and commissioning before full grant payout.
5. **Synchronized CEJA & MDI Pipelines:** Form formal referral and hiring pipelines between ILSFA Approved Vendors and existing CEJA / Utility MDI workforce training programs (e.g., Revolution Workshop, Nicor Gas, ComEd) to execute diagnostic audits and envelope retrofits.

Respectfully submitted,

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