

Modernizing HOT2000

Recommendations from Energy Advisors (EA) to Environment and Climate Change Canada (ECCC)

Prepared by the Canadian Association of Consulting Energy Advisors (CACEA) on behalf of its EA Council Members
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Preamble

CACEA is pleased to submit the following recommendations to Environment and Climate Change Canada (ECCC) as it undertakes the modernization of HOT2000. They reflect the collective, practical experience of the Energy Advisors (EA) who rely on the software every day, and are offered in the spirit of a continuing, constructive dialogue between CACEA and ECCC on this initiative.

1. Purpose and context

On September 11, 2026, CACEA convened a national session of its EA Council to gather practitioner feedback on the modernization of HOT2000. Participants primarily included EAs working in existing homes, new construction, and code compliance (National Building Code (NBC), NBC 9.36.5, BC Step Code and Ontario SB12), Quality Assurance (QA) Specialists, and Service Organization (SO) representatives. Participants work across British Columbia, Alberta, Manitoba, Saskatchewan, Ontario, and Atlantic Canada.

This document consolidates the discussion into recommendations for ECCC. It is intended to complement, not replace, the formal feedback form closing September 18, 2026, which did not fully capture feedback specific to day-to-day modelling and workflow issues that EA experience. Comments are presented without attribution, and reflect the collective, practical experience of the people who use HOT2000 every day.

CACEA members welcomed the breadth of ECCC's call for feedback, which several long-time users described as unprecedented, and are eager to participate in the more concentrated engagement that ECCC has indicated will follow. The Council emphasized the critical importance of engaging directly with EAs, and not only SOs. CACEA also recognizes that modernization is likely to proceed in phases and encourages ECCC to sequence changes so that no single release destabilizes an EA's ability to complete files already in progress.

2. Summary of priority recommendations

Across a wide-ranging discussion, the following priorities emerged most consistently:

- **Design for how files are actually used.**

- Map the full lifecycle of a HOT2000 file for each use case (existing homes, new construction, code compliance, utility, and low-income programs) before finalizing the “record” architecture.
- As an example, files routinely pass through many hands; in new construction this can be over many years. Therefore, a model tied to a single account will not work.

- **Keep an offline path.**

- Modellers need to work without connectivity. They may keep non-ERS and/or preliminary versions of a model as part of their workflow.
- They may want to route files through their SO for QA before anything reaches the ECCC portal (or is to become a final record). This may become part of the SO role and requirement for ERS and/or code compliance verification.

- **Protect the people delivering the transition.**

- No EA should have an audit or client file caught mid-process when the platform changes.
- Training and support should be ready prior to the official launch to reduce errors and delays in delivering files to their clients.
- A beta-type soft launch to ensure proper functionality.

- **Eliminate workarounds at the source.**

- The existence of a long workarounds document is problematic.
- Fix and later update underlying limitations.
- If a workaround must remain or is introduced later, the software should flag it and alert the user, reducing errors caused by overlooking one of many workarounds.

- **Model modern mechanical systems natively.**

- Enhance modelling of multiple heating systems within one building (e.g., a mini-split heat pump serving a secondary suite), to enable more suitable modelling for heat pumps in separate zones.
- Simplify or build in the calculations for cold-climate and air-to-water heat pumps, heat pump water heaters ducted to the outside, thermal-storage water heating and PV so they are modelled inside the software with no external spreadsheets.

- **Reduce duplicate data entry through integration.**

- Provide the ability to connect directly to reference databases (equipment, windows, ENERGY STAR®).
- Enable auto-population of previous file IDs or the next file ID for the EA signed in.
- Generate a standardized data collection form.
- Provide native geometry calculators, so the same information is not measured, looked up, or typed twice.

- **Modernize the interface and data entry.**
 - Type-to-search codes at the drop-down lists.
 - Grouped and batch-edited windows.
 - User-defined materials.
 - Tabular paste-in entry.
 - Contextual help linked to procedures.
 - Explicit error messages.
- **Make the software stable and forgiving.**
 - Enable auto-save, version history, crash-safe recovery, and faster saves.
- **Simplify new-construction submissions.**
 - Automate the 9.36.5 reference house, since building a full separate model uses a different approach than ERS procedures require.
 - Remove the P-file requirement and the duplicate D/E file step — the P file is useful for starting a new-construction model, but final submission can rely on the N file alone, just as a D file can stand in for an E file; today the P file is an administrative step submitted as an identical copy except for the letter “P,” which costs EAs time without adding value.
 - Standardize reporting for authorities having jurisdiction (AHJ). CACEA's CAF project may provide content that could assist with this.
- **Be transparent about carbon.**
 - Publish version emission factors, allowing them to be reviewed and, where appropriate, edited using localized authoritative data rather than the provincial figures currently in use, which can be outdated.
 - Lay the data foundation (a proper material database) for future embodied-carbon capability.
- **Simplify what homeowners receive.**
 - The EnerGuide report itself should be easier for homeowners to understand.
 - This could include a high-level summary of eligible rebate and incentive categories, without stating dollar values that vary by program and location.
- **Open the ecosystem while keeping a free public interface.**
 - A documented API and support for third-party front ends will drive innovation, provided the ECCC interface remains free and complete enough that no EA is forced into paid subscriptions to do basic work.

3. File lifecycle, sharing and the “record” model

Participants understood that ECCC intends to move HOT2000 to a cloud-based platform in which a model becomes a record linked to the EA who created it. This raised the most concern of any topic, not because of the technology itself but because it does not reflect how files are used in practice.

Recommendation 1: Map and design for the real lifecycle of a file before finalizing the architecture.

The lifecycle of an existing-home evaluation is vastly different from that of a new-construction or code-compliance file. If the lifecycle is not understood, it cannot be designed for. CACEA has mapped these workflows (see Appendix A), and suggests this topic warrants a dedicated design conversation.

What we heard on our meeting: A file is created by one EA, revised again as the project design changes and later as as-built conditions are confirmed, adjusted by a program delivery agent to align the file with program-specific requirements, reviewed by a building official, and finalized years later by someone else entirely. The idea that “one person works on a file from front to back” does not match reality.

Recommendation 2: Allow models to be owned at the organization level and transferred between accounts.

Models must be able to belong to an EA company or SO, be shared with named collaborators — including two or more independent EAs working together — and be reassigned when staff change. Specific situations raised include:

- In new construction, teams of multiple EAs working on production-builder files, where a model passes through several EAs before final review by the EA responsible for submission.
- Building-permit models can often be created years before construction. The EA who built the model may no longer be licensed or work for the firm that submitted the file when the building is finally completed and code compliance is verified or the building labelled.
- Utility and low-income retrofit programs in which the delivery agent receives the EA's file, revises it to the program scope, sends it to the utility or system operator, and revises it again after the contractor completes the work.
- Subsequent homeowners, who currently cannot access the evaluation performed for a previous owner of the same house.

Recommendation 3: Preserve an offline, standalone mode with an upload step.

Many participants asked that the modernized tool remain usable offline, where submissions are deliberately uploaded. This addresses connectivity problems on-site, keeps the EA in

control of their own work, and preserves the ability to create versions of models that are never submitted but used for discussing optimization options. It also keeps the SO QA step in its proper place where QA takes place before a file is uploaded/final. An upload pathway routed through the SO would preserve that. CACEA encourages ECCC to preserve the SO model for quality assurance wherever possible.

What we heard: If we are uploading directly to the cloud, what is the point of the SO and QA? QA is important and should be done before the file is “submitted”/final.

Recommendation 4: Support non-ERS, preliminary and variant files.

In new construction, a great deal of HOT2000 use falls outside of an EnerGuide label. Models are built for NBC 9.36.5 compliance, the BC Step Code, development-permit stage feasibility, and for consulting scenarios. In BC, the code-compliance version of a model frequently differs from the ERS version. As an example, an airtightness credit applied to a townhouse unit, or a municipality directing a different weather location than ERS requires. The platform must allow these files to exist, to be duplicated and branched, to be exported, and to sit indefinitely without being treated as incomplete submissions. Participants asked ECCC to confirm explicitly whether non-ERS versions of a model can be created and stored.

Recommendation 5: Maintain full export and import through a documented API and a portable file format.

EAs rely on external tools such as the BC Step Code calculator, data-collection applications, and third-party interfaces. The modernized platform must continue to produce a portable model file that can move in and out of those tools.

As a related recommendation, participants asked whether ECCC has consulted authorities having jurisdiction, whose compliance spreadsheets currently use HOT2000 outputs.

Recommendation 6: Protect the transition period across every program stream.

Whatever the modernized platform looks like, EAs need a defined period of time where the current and new systems both work. Participants were clear that no EA should have an audit or client file caught mid-process because of a change in platforms partway through a project. This concern applies to all aspects of an EA's work from existing-home audits and consulting work to the potentially long new-construction timelines discussed in Section 7.

Recommendation 7: Have training and support ready from day one.

Not every EA will be equally comfortable adapting to a new system quickly. Participants requested that training materials, documentation and support channels be in place prior to launch rather than added after the fact. We do not want the transition itself to become a second source of disruption.

Recommendation 8: For Existing Homes, allow EAs to search for a property's previous audit file before submission.

Recommendation 8 would avoid duplication, while identifying the date of last evaluation to determine if a new evaluation is required or needed, e.g., whether it is a new owner or an existing owner adding additional upgrades to their home.

Energy Advisors currently cannot determine whether another advisor has already audited an existing home before beginning a new audit. Knowing whether and when a prior evaluation occurred helps establish whether another is warranted—for example, after a change in ownership or additional upgrades—and prevents duplicate audits. Service Organizations may have limited access to this information, but ECCC's portal reveals it only after submission, when it returns a previous file ID that must then be entered manually in the Prev File ID field.

Participants requested the ability to search a property, by address or roll number, before or during an audit and see any prior file ID directly — or, more efficiently, have the platform auto-populate the Previous File ID field once the address or roll number is entered. This would reduce back-and-forth with ECCC and fits naturally with the record-based architecture discussed above.

4. Workarounds, unusable inputs, and administrative fields

Recommendation 9: Treat the elimination of the workarounds document as a primary objective of modernization.

The long and convoluted list of workarounds can be burdensome for experienced EAs and a potential 'trap' for new ones. EAs must remember which workarounds apply (heat pumps, basements, foundation volume-to-perimeter ratios, and many more — see CACEA's Workarounds reference document for the current list) with no prompt from the software when one (or more) has been missed. First, modernization should fix the root causes so that the current workarounds are no longer needed. It should also establish a process to correct and release fixes quickly rather than accumulating new workarounds.

What we heard: It is an exceedingly difficult list to keep track of and an extremely easy list to fall afoul of without realizing you have done so.

Recommendation 10: Where a workaround must remain, have the software flag it.

As a stop-gap, the software should detect the conditions that trigger a documented workaround, highlight it, and alert the user, ideally with a link to the relevant procedure.

Recommendation 11: Remove or clearly disable inputs that users are told never to use and prevent known file-corrupting actions.

Fields that the manuals say not to touch, or that the manuals are silent on, should be removed, hidden or clearly disabled — there are too many individual fields to enumerate

here, but they follow the same principle as the destructive actions below. Known destructive actions should be blocked, for example the foundation wizard wiping a file, or an overhang “negative” height that the procedures require but the software rejects with an error. New EAs currently lose files before they learn these hazards.

Where an input is restricted for EnerGuide purposes but needed for other uses such as CSA F280 room-by-room calculations (for example, more accurate basement configurations), the underlying calculation should be made correct rather than simply prohibited. As an example, participants noted that partial-height basement insulation does not allocate composite R-values or placement heights correctly. Building-code-related examples of this same principle are discussed further in Section 5.

Recommendation 12: Make it visually explicit which fields affect the energy calculation, and which are administrative only.

A growing number of inputs exist purely for data collection and have no bearing on results, such as the PV capacity field added for program tracking (system area, not capacity, drives the model) or attached-surface areas. Because these administrative fields look identical to modelling inputs, mistakes made in them go unnoticed, while genuine data-entry errors elsewhere can wrongly be attributed to them. A consistent design convention (for example a distinct colour or icon for administrative fields) would resolve this. Separately, and as a policy matter, CACEA asks ECCC to state the rationale for each data-collection-only field that EAs are required to complete, in light of the time and cost involved.

Recommendation 13: Rationalize drop-down options and document when each should be used.

Options with no practical guidance, such as the five window low-emissivity (low-e) coating types, should either be removed or explained. Users typically default to whatever they were first taught without any basis for the choice.

5. Modelling capability and accuracy

5.1 Heating, cooling, and domestic hot water

Recommendation 14: Allow multiple independent heating systems within one building.

Homes with a secondary suite served by a mini-split heat pump while the main dwelling uses a gas furnace and air conditioner are common in many regions and cannot be modelled properly. The current approach of combining systems through weighted averages often penalizes the home or ignores the impact of the heat pump altogether. The same limitation affects multi-unit residential buildings, where different units have different heating and water-heating systems. The software should allow separate systems to be assigned to separate zones or units, with usage apportioned accordingly. The approach should also scale for all MURBs, from a basement suite to a large multi-unit building.

Recommendation 15: Build heat pump calculations into the software and improve their fidelity.

- The cold-climate heat pump calculator should be incorporated into the software, not an external spreadsheet.
- Several participants believe the current cold-climate procedure and restricted-temperature workaround do not represent real performance and may overstate heat pump contribution relative to backup heat. Participants recognized that correcting this, and the related ask below to use manufacturer performance curves directly, would likely require substantial rework of the calculation engine itself and may not be feasible for ECCC in the near term.
- Allow manufacturer performance curves to be entered and applied at the correct outdoor temperature on an hourly basis rather than through a weighted average.
- Similar to Recommendation 14 above, provide a defined method for a heat pump and/or a separate air conditioner in the same home; today there is no procedure, and advisors have to improvise. This is becoming more important as refuge rooms and increased focus on cooling become important considerations for building code — in particular in BC.
- Model heat pump water heaters natively, including whether they are ducted to the exterior, split, or drawing from conditioned space, as simple selections rather than external calculations.

Recommendation 16: Add air-to-water heat pumps and other emerging technologies.

Air-to-water heat pumps are increasingly installed in many parts of Canada, in older hydronically heated homes, and in small MURBs with central boilers whose owners want to decarbonize. These systems meet CSA requirements but are not in the equipment database and cannot be modelled. As such, EAs cannot show defensible savings in funding proposals or implementation reports. Thermal-storage and phase-change water heaters are a similar gap. CACEA recommends a faster, defined process for adding new technology categories so that the software does not lag the market by years. This again is important in reference to meeting higher building code requirements. The same is true within existing categories: participants noted it can take a long time for HOT2000 to add support for a specific new model, such as a newly released heat pump, even where the broader category is already supported.

5.2 Envelope and materials

Recommendation 17: Allow user-defined materials with a name and R-value per inch that appear in standard assembly drop-downs.

Today, representing an insulation product at its documented R-value per inch (for example, spray foam at R-6 per inch rather than the fixed 5.12) requires a full custom code or

manipulating thickness to approximate the result. EAs should be able to define a material once and reuse it when building conventional wall, ceiling, and floor assemblies. Drop-down values for common items such as attic insulation depth should also be more flexible since the software already applies a default R-value per inch.

Recommendation 18: Report the composition of custom codes in the full house report.

A custom assembly currently appears in reports only by its user-given name and effective R-value, which gives building officials and reviewers no visibility into what was actually modelled. Reports should list the layers and values of any custom code and should distinguish user-specified inputs from standard assembly codes.

Recommendation 19: Explore an integrated, fairly governed product database.

Participants proposed that manufacturers be able to list products with associated thermal data (and, in future, environmental product declarations) in a database the software can query, so that an EA can select a named product rather than look up a specification sheet (similar to P-9 and Drain Water Heat Recovery systems). Similar integration with ECCC's existing searchable equipment databases for heating, cooling, and water-heating appliances directly in HOT2000 would remove the need to leave the software to look up ratings. Participants acknowledged the need for fair, non-competitive access across manufacturers and suggested ECCC engage manufacturer associations as part of this consultation. As a concrete example, entering a heat pump's AHRI number, or an ECCC/NRCan reference number for a window or door, should automatically pull in the associated specifications rather than requiring the EA to look them up separately and re-key the data – a step that also introduces transcription errors.

Recommendation 20: Update archaic geometry options.

Examples raised include roof pitch options that stop at 7:12, and foundation type selections that have not changed in decades. Limited perimeter beyond 329 feet is another limitation; some larger homes need to be split because of it.

Recommendation 21: Build in the geometry and site calculators EAs already rely on.

HOT2000 already addresses the heat-loss and heat-gain calculations; that is not the gap. What EAs need help with is the geometry math that happens before any of that: calculating area and volume, the height of the highest ceiling, the area of a gable wall, the dimensions of a 1.5-storey gable wall, and total versus exposed perimeters where multiple foundations exist. Today this is often worked out by hand or in a separate spreadsheet before it is entered into HOT2000. Built-in calculators for these recurring geometry problems would reduce both the time involved and the risk of transcription error.

5.3 Solar, weather, and calibration

Recommendation 22: Align solar orientation conventions with industry practice and add visual guidance.

HOT2000's azimuth convention differs from what EAs see in the field and in mapping tools and is a recurring source of error for new EAs in particular. The recent solar calculator changes were welcomed; text-only documentation and descriptions should be supplemented with diagrams. PV inputs generally should be more flexible and their effect on the model should be clear. Participants also suggested the software pull in solar collection data automatically, the way some third-party tools (for example, Volta Snap) already do, rather than requiring a separate lookup.

Another recommendation was to allow direct input of solar designer inputs from their design to align with actual performance. This would enhance Net Zero labelling efforts.

Recommendation 23: Resolve weather-location conflicts and unify the climate maps.

Jurisdictions frequently direct EAs to use a weather location other than the one HOT2000 procedures assign, particularly in mountainous regions of BC and parts of Ontario where elevation changes the climate dramatically within a single community. The software should accommodate jurisdiction-directed locations without workarounds, and the CSA F280 climate map and the HOT2000 map should be combined into a single reference. This may be better suited as an additional H2K input field; participants were doubtful ECCC would accept a jurisdiction-directed weather location outright, for the sake of consistency in ERS procedures.

Recommendation 24: Calibrate the engine against measured consumption.

A large utility study in BC reportedly found that HOT2000 substantially overestimates natural gas consumption in existing homes. CACEA recommends that ECCC review the engine against measured data and publish the results. CACEA will share further detail as it becomes available.

5.4 Operational and embodied carbon

Recommendation 25: Publish, version and allow review of emission factors.

EAs are increasingly asked by funders and housing agencies to justify GHG figures. However, emission factors in HOT2000 are not transparent and cannot be edited. In these cases, some EAs have to reverse-engineer them or calculate GHGs outside of the software. ECCC should publish the factors and their sources, version them, and consider allowing edits where a program or jurisdiction requires it (including for renewable natural gas). Because factor changes can alter code-compliance outcomes in jurisdictions with carbon-based step codes, changes need clear effective dates and grandfathering rules.

Recommendation 26: Lay the foundation for embodied carbon through a transparent material database.

Industry programs are beginning to consider embodied carbon and HOT2000 already captures much of the required information. The key enabler is an accurate, transparent material database that stops treating dissimilar materials as interchangeable stand-ins (for example, expanded polystyrene versus mineral wool, or cellulose versus blown fibreglass). Cradle-to-gate (A1 to A3) analysis is the realistic and most relevant scope for residential construction; later lifecycle stages are out of scope for now. At minimum, the platform should provide an open connection to dedicated Life Cycle Assessment (LCA) tools and the ability to link products to environmental product declarations. This is going to be an important consideration when NBC 2030 comes into effect.

5.5 Client-facing reporting

A few suggestions concerned not the modelling itself, but what homeowners ultimately receive.

Recommendation 27: Simplify the client-facing EnerGuide report.

Homeowners often struggle to understand their EnerGuide report as it stands today. Modernization is a natural opportunity to make the report clearer for the person who is actually paying for the audit, not only cleaner in the backend systems that produce it. CACEA would be happy to participate in updating these reports.

Recommendation 28: Support emailing the report to the client after submission.

Once an existing home file has been uploaded to ECCC, it would help if HOT2000 could send the report files directly to the client by email — copying the EA and SO so both retain a record and can respond to follow-up questions — rather than the EA handling that step separately afterward. Participants acknowledged this may go beyond what HOT2000 can do on its own without portal-like infrastructure similar to the Greener Homes portal but raised it as a direction worth considering for existing homes; new-construction reporting follows a different process and was not assumed to work the same way.

5.6 Additional technical feedback from EA reviewers

The EA Council review also raised additional technical and procedural feedback about the HOT2000 engine and compliance workflow. Participants asked ECCC to consider the following alongside the recommendations above:

Software and computational engine

- Confirm whether HOT2000's engine uses monthly or hourly temperature bins for managing temperature changes during calculations and align its methodology with National Building Code and BC Building Code provisions requiring hourly or finer methods for Part 9 compliance. If HOT2000 cannot meet this requirement, either the engine or the Code language needs to change.

- Prioritize fixing the engine's handling of variable heat pump capacity and efficiency across outdoor temperatures, for both space heating and heat pump water heating, so the external Heat Pump Calculator workaround can eventually be retired.
- Add the ability to output CSA F280-conforming heating and cooling loads directly from HOT2000, building on work ECCC has already funded through a third party.
- Update the .tsv export to include gross space heat loss for both the proposed and reference houses, so program datasets can be used to calculate every Step Code metric, including TEDI % Better Than, and restore window performance data to the .tsv, which has been dropped from recent versions.
- Investigate why Normalized Leakage Rate (NLR) is sometimes reported as zero in the .tsv export, including in the current release, which blocks NLR-based compliance analysis of that data.
- Consider a more sophisticated solar analysis option capable of handling array shading.
- Where a professional engineer has already performed a calculation — for example for solar, air-source or ground-source heat pump performance — that does not match HOT2000's built-in procedure, allow the EA to enter the engineered value directly as an input rather than forcing it through a procedure not designed for that case.

Procedural

- Foundation insulation configurations are a significant source of the ERS workaround burden. Consider a modelling pathway for new construction that relies on EAs to select the correct configuration from the existing options, rather than restricting the software's full analytical capacity on the assumption that EAs cannot apply it properly.
- Treat over height crawlspaces and basements currently deemed insufficiently below grade as warnings rather than hard-coded blocks, allowing EAs to apply professional judgment.
- Provide clearer guidance for modelling mechanical systems in MURB whole-buildings, particularly how to split secondary water-heating systems that serve secondary suites — for example by bedroom or fixture count — rather than defaulting to a fixed 75/25 split.
- Participants also raised a licensing question outside HOT2000's modelling functionality: that ECCC review whether the free version of HOT2000 should continue to be offered without an ERS licence, since some unlicensed users of General mode are, by participants' observation, producing incorrect models.

6. Interface, data entry, and usability

Participants described the current interface as resembling 1980s software and noted that the learning curve it imposes is itself a barrier to bringing new EAs into the profession.

Reducing tedium and manual re-entry was the single most common usability request. This will also contribute to fewer errors, and more efficient use of time.

Recommendation 29: Design for the field, not only the desk.

A great deal of EA work happens on a tablet or laptop on-site, not at a desktop workstation. If the modernized tool remains desktop-first the way HOT2000 is today, that is a missed opportunity to make on-site work easier. Participants asked that the interface be designed to work well on the devices EAs actually carry into a home. It is important, however, to consider the EA's workflow. Not all modelling can be done on-site, particularly for homes with complex geometry and size. In these cases, the on-site work is focused on photos and measurements, with the full model built later. A staged-entry workflow would help here: allow simple site observations. As an example, a heating system's model number and type can be entered on-site, with more complex details such as geometry added once full calculations are needed.

Recommendation 30: Provide type-to-search entry for codes and drop-downs.

Most experienced EAs have memorized common assembly codes and keep lists of them. As such, they should be able to type a code or the first few characters of a description and have the list narrow, rather than scrolling through menus.

Recommendation 31: Allow windows to be grouped by type and edited in batch.

An EA should be able to define a window type (for example, casement, slider, picture) with its U-value and solar heat gain coefficient once and assign it to each relevant window, while still allowing an individual window's U-value or solar heat gain coefficient to be overridden where its actual performance differs from the assigned type. When the window order changes, editing the type should update every window. Batch-editing of window properties exists in part today but remains incomplete, and re-entering 30 to 40 windows one at a time after an upgrade takes notable time to edit and is a common point of file crashes.

We would ask that a custom window package can be created within the file and remain with the file and can be edited, as opposed to being a list of codes created and always in that list for all files.

Recommendation 32: Support tabular and copy-and-paste data entry as well as import from data-collection tools.

Third-party tools already allow a full window schedule to be pasted in. The modernized software should offer the same for windows, walls, and other repeated elements, and should support import from field data-collection forms (DCF), including simple sketches of the building geometry, so that on-site data does not need to be re-keyed.

Recommendation 33: Auto-generate a standardized DCF from the finished model.

EAs and SOs each use their own field data-collection process today. However, once a model is complete, HOT2000 itself should be able to generate a standardized DCF from it. That

way, whoever reviews the file sees the same consistent DCF format, sketches included, regardless of which EA or SO produced it.

Recommendation 34: Give explicit, actionable error messages.

Errors should state exactly what is wrong, where it is in the model, and how to fix it. The existing calculate-and-report route provides “hints,” but many messages remain opaque. This would improve QA.

Recommendation 35: Validate the model in real time, not only at submission.

Today, an issue such as a ceiling area smaller than the foundation area is only flagged when the file is submitted, after the EA has completed the model. The modernized software should catch this kind of issue as the model is being built, explain what the problem is and what the fix would be, and let the EA apply the fix directly rather than hunting it down afterward. This would also reduce QA load downstream.

What we heard: By the time an error like that surfaces, the model is already finished — the software should have caught it while it was being built.

Recommendation 36: Build contextual help that links directly to procedures.

Each screen or input should link to the relevant section of the modelling procedures, with definitions of terms (air changes per hour, normalized leakage rate, how to perform an RSI calculation) and guidance for special cases such as walk-out foundations or pony walls. The current “Help” content is rarely updated and largely forgotten.

Guidance for MURBs in particular is scattered across several documents and should be consolidated. Contextual “insight” prompts that recognize what the user is doing and surface the applicable procedure would reduce reliance on memory.

Recommendation 37: Make the software stable, with auto-save, version history, and crash recovery.

Several EAs reported files that close without warning on save, with no backup, no version history, and no recovery, requiring the model to be rebuilt from scratch, sometimes repeatedly in a single month. Saves are also slow, particularly with the Ontario reference house, costing EAs active working time on every file and increasing the risk of losing work if the software becomes unresponsive mid-save. The modernized software should auto-save, maintain version history, and, if a fatal state is detected, allow the user to export their data before closing.

7. New construction and code compliance

Recommendation 38: Automate the 9.36.5 reference house.

EAs should not have to build and maintain a separate reference-house file. The software should generate the reference house from the proposed model according to the standard,

and export both the proposed and reference results. Revisions currently have to be made twice, once in each file. Automation will not resolve every local requirement, but it removes the most tedious and error-prone step. This applies to the non-ERS, General-mode pathway as well: it remains a HOT2000 workflow that ECCC has itself published guidance for and should not be set aside during modernization.

Recommendation 39: Remove the P-file requirement for new construction and the duplicate D/E file step.

In practice the P file is a copy of the N file with a different label, and it should not need to be submitted. The requirement to update a D file to match an E file was raised as a similar duplication. CACEA will address these in its separate response on new-construction procedures, which have been in discussion with the government for over a year. However, the recommended revisions should also help to inform the design of the modernized platform.

Recommendation 40: Standardize reporting for AHJs and Building Officials.

Municipal building officials describe code compliance as inconsistent and lacking visibility. They also cite the absence of standardized reporting as a major issue. A standard compliance report generated by the software, showing assemblies, user-specified inputs, and results in a consistent format, would help both advisors and reviewers. An expanded technical guide for energy modellers on compliance practice would also be valuable. Note that this may be addressed when CACEA completes its CAF project.

Recommendation 41: Plan the transition around long new-construction timelines.

Large multi-unit projects can span years between permit and occupancy, and past changes to modelling guidelines required hundreds of models to be updated. The transition plan should allow files created under the current software and procedures to be completed under them and should avoid possible forced re-modelling. Some participants suggested modernizing the existing-homes stream first, and keeping the current desktop software running for new construction and code compliance until the new platform is proven, given the reliance on it for timely occupancy permits. This concern is not unique to new construction — see the transition-period recommendation in Section 3, which applies equally to audits and other client engagements already underway.

8. Ecosystem, third-party tools, and engagement

Recommendation 42: Open the platform to third-party front ends through a documented API, while keeping a free and complete public interface.

Many participants believe that the current environment, in which ECCC controls both the method and the means, has bred a lack of innovation, and welcomed the prospect of independent developers building interfaces and tools on a common engine. This would also allow parametric modelling on EAs' computers.

Others cautioned that if the best tools all become paid subscriptions, the cost of doing basic evaluations will rise, and questioned whether ECCC intends to leave the front end entirely to the private sector.

CACEA's position is that both can be true: ECCC should own and maintain a free, capable interface (which underpins the integrity of the EnerGuide label) and should also make it easy for others to build on the engine. ECCC should state its intentions on this clearly. This should extend upstream of modelling as well: some advisors are already building their own intake apps and field data-collection tools that begin gathering a homeowner's information before the EA arrives on-site, and the modernized platform should make it easy for tools like these to connect rather than funnelling everything through one official application.

Participants also flagged the cost side of this as a workforce equity issue: new subscription costs, hardware requirements, or added gatekeeping through SOs would land hardest on solo and small-shop EAs rather than large SOs and should be weighed as such rather than treated only as a technical question.

Recommendation 43: Explain the rationale for the move to a cloud platform, and preserve what works.

Not all participants were persuaded that a new online platform is the right path; some would prefer that the existing software be fixed, its workarounds resolved and its external workbooks embedded. CACEA understands that the current code base cannot be sustained and that a cloud platform may support on-site modelling but recommends that ECCC communicate this rationale directly to users, and that the new platform retain an offline mode as noted above.

Recommendation 44: Create a faster technical query channel for Energy Advisors.

A simple technical question currently travels from the EA to the SO QA specialist and then to ECCC, taking up to three weeks or more, impacting submission deadlines. A knowledge base of resolved questions and a faster route for technical clarifications would reduce guesswork and QA load. Participants suggested this should go beyond a static FAQ, toward an actively maintained, searchable pool of resolved questions, potentially AI-assisted, that keeps pace with how quickly new modelling situations come up in practice.

Recommendation 45: State a position on artificial intelligence and automation.

Tools that read plans and generate near-complete models already exist and are improving rapidly. Participants recognized that ECCC will and should require a licensed human to take responsibility for every submission, and that the use of AI in third-party tools is a developer decision. CACEA nonetheless recommends that ECCC articulate its policy so that developers and EAs know what is and is not permitted.

Recommendation 46: Continue engaging EAs directly and involve manufacturers and authorities having jurisdiction.

The Council asks that the concentrated engagement ECCC has planned include practicing EAs from each stream of work, and that ECCC also consult manufacturer associations (on product data) and building officials (on compliance reporting and file formats) as part of the modernization.

9. Next steps

CACEA would be pleased to conduct a follow-up member survey to gather input from advisors who could not attend and explore additional concerns or recommendations, with the results shared with ECCC. CACEA also offers to collaborate with ECCC by reviewing HOT2000 file lifecycles across use cases, testing draft interface designs with practising EAs, and helping prioritize the recommendations above. We thank ECCC for the opportunity to contribute and look forward to continued collaboration.

Questions on this submission may be directed to **Cindy Gareau, Executive Director**, at manager@cacea.ca.

APPENDIX A

Reference Diagram · Energy Advisor Workflow

HOT2000 File Life Cycle

The same modelling software, two different jobs. Below are the two paths a HOT2000 file most often takes — from an existing home going through a retrofit audit, and from a new home being designed and built to code. Both share a shape: data goes in, a file gets built, it is checked and submitted, life happens on site, and the file is updated and finalized.

How to read this: each numbered row is one point in the file's life. Most rows are a point where the HOT2000 file itself is created, edited, checked, or filed. Rows marked “Real-world step” are periods where construction or retrofit installation is happening on site while the file sits untouched, waiting for the next visit.

Existing Home — Retrofit Audit

10 stages · one file, two evaluations · Program: EnerGuide Rating System

#	Stage	What happens	File status
01	Booking & intake	Homeowner books an evaluation through a licensed Service Organization (SO); the job is assigned to a registered Energy Advisor (EA).	No file yet
02	Pre-retrofit site visit	EA measures the envelope and mechanical systems as-found and runs a blower-door air-tightness test (CAN/CGSB-149.10).	Field data capture
03	Pre-retrofit file build	Field data is entered into HOT2000. The software models the house as-found and calculates the pre-retrofit EnerGuide rating and GHG estimate.	.h2k file created
04	QA review (pre)	File and site photos are checked against the ERS Standard and Quality Assurance Procedures before anything is submitted.	Internal / SO review
05	Submit to national registry	The SO submits the file to ECCC's EnerGuide database. Homeowner receives the pre-retrofit label and a report of recommended upgrades.	Filed with ECCC
06	Retrofits get done	Homeowner completes the upgrades, e.g., insulation, windows, heat pump, on their own timeline. The HOT2000 file sits idle in the meantime.	<i>Real-world step — no file change</i>
07	Post-retrofit site visit	EA returns, verifies the installed upgrades against the recommendations, and re-runs the blower-door test.	Field verification
08	Post-retrofit file update	The same file is duplicated and updated with the as-built upgrades; HOT2000 recalculates the rating and modelled savings.	.h2k file updated
09	QA & final submission	Updated file is re-checked and submitted. ECCC issues the final EnerGuide label with the before/after comparison and savings.	Final label issued

#	Stage	What happens	File status
10	Archive & retention	SO/EA retains both files per ECCC's audit and retention rules; homeowner keeps their report for grant or rebate claims.	Subject to ECCC audit

New Construction — Code Compliance

11 stages · design model to compliance record · Programs: NBC 9.36 · ENERGY STAR · R-2000 · Net Zero

#	Stage	What happens	File status
01	Design intake	Builder or designer shares drawings and specs — envelope, HVAC, DHW — with the EA at the permit-design stage.	No file yet
02	Proposed-house model	EA enters the design into HOT2000 to build the “proposed house”: assemblies, windows, mechanicals, and an assumed air-tightness target.	.h2k file created
03	Reference-house generation	If following the 9.36.5 compliance pathway, a matched “reference house” is built to NBC Table 9.36.2.6.A code-minimum values, as the yardstick the proposed design must beat.	Code baseline model
04	Compliance check & iteration	Proposed vs. reference (or a program target like Net Zero) energy use is compared. Assemblies are revised and re-run until it passes.	Repeats until it passes
05	Design-stage submission	The proprietary (provincial or jurisdictional) compliance report is filed with the building department alongside the permit application.	Filed for building permit — still no submission to ECCC
06	Construction proceeds	Builder frames, insulates, and installs mechanicals. Any substitutions to windows, insulation or equipment are logged for the file. In many cases, a pre-drywall test and onsite verification evaluation is done. Updates to the P file can be done at this stage as per site observation.	<i>Real-world step — no file change</i>
07	Pre-occupancy testing	The finished home is blower-door tested, and the HRV/ERV is commissioned, to confirm actual as-built air-tightness.	Field verification
08	As-built file finalization	HOT2000 file is updated with tested air-tightness (ACH@50 Pa) and any as-built substitutions from the build.	.h2k file finalized
09	QA & program registration	File is reviewed and submitted to the applicable program administrator — ENERGY STAR, R-2000, Net Zero Home, or EnerGuide for New Homes.	Program SO review
10	Labelling & certification	EnerGuide label and/or program certificate is issued and affixed (typically at the electrical panel); documentation goes to builder and homeowner.	Label issued

#	Stage	What happens	File status
11	Archive as compliance record	Final file is retained as the official code-compliance record for the building department, and as a baseline for any future retrofit.	Long-term record

This is a general, high-level reference — actual steps, forms and file-naming vary by Service Organization, province, and program version in effect at the time of the evaluation. Always follow current ECCC EnerGuide Rating System / Administrative & Quality Assurance Procedures and applicable provincial energy code guidance.

Sources

- [NRCan — How to become an NRCan-registered energy advisor](#)
- [NRCan — Step 2A: Pre-retrofit EnerGuide evaluation](#)
- [NRCan — Step 4: Post-retrofit EnerGuide home evaluation](#)
- [Guidelines for Using HOT2000 v.11 to Demonstrate Compliance with Subsection 9.36.5 of the National Building Code](#)
- [CACEA — Canadian Association of Consulting Energy Advisors](#)