Investor Confidence Project

Project Developer and Quality Assurance Assessor Training:

Industry and Energy Supply

20th November 2018

Presenters:

Luís Castanheira, ICP Europe Technical Director

Bethan Phillips, ICP Europe Technical Team

Welcome!

Your Presenters

- 20 years in Sustainable Energy
- Energaia – Energy Management Agency
- Porto Polytechnic Engineering School
- EU Commission Expert
- CMVP and IPMVP Technical Committee Member
- Energy auditor, BREEAM, EPBD building energy assessor

Luis Castanheira
ICP Europe Technical Director

Your Presenters

- 15+ years in low energy building design and sustainable energy solutions
- Principal consultant at Verco
- Building services engineering, mechanical engineer
- CMVP accredited, ISO 50001 lead auditor
- Energy audits, feasibility studies (CHP, district heating, etc), sustainability assessments

Bethan Phillips

ICP Europe Technical Team

European Commission Disclaimer

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Agenda

- Housekeeping
- Strategic approach
- What is the Investor Confidence Project?
- Roles and responsibilities
- Process and tools available
- ICP Stages – requirements
- Worked examples
- Application process

This webinar will be recorded

Housekeeping

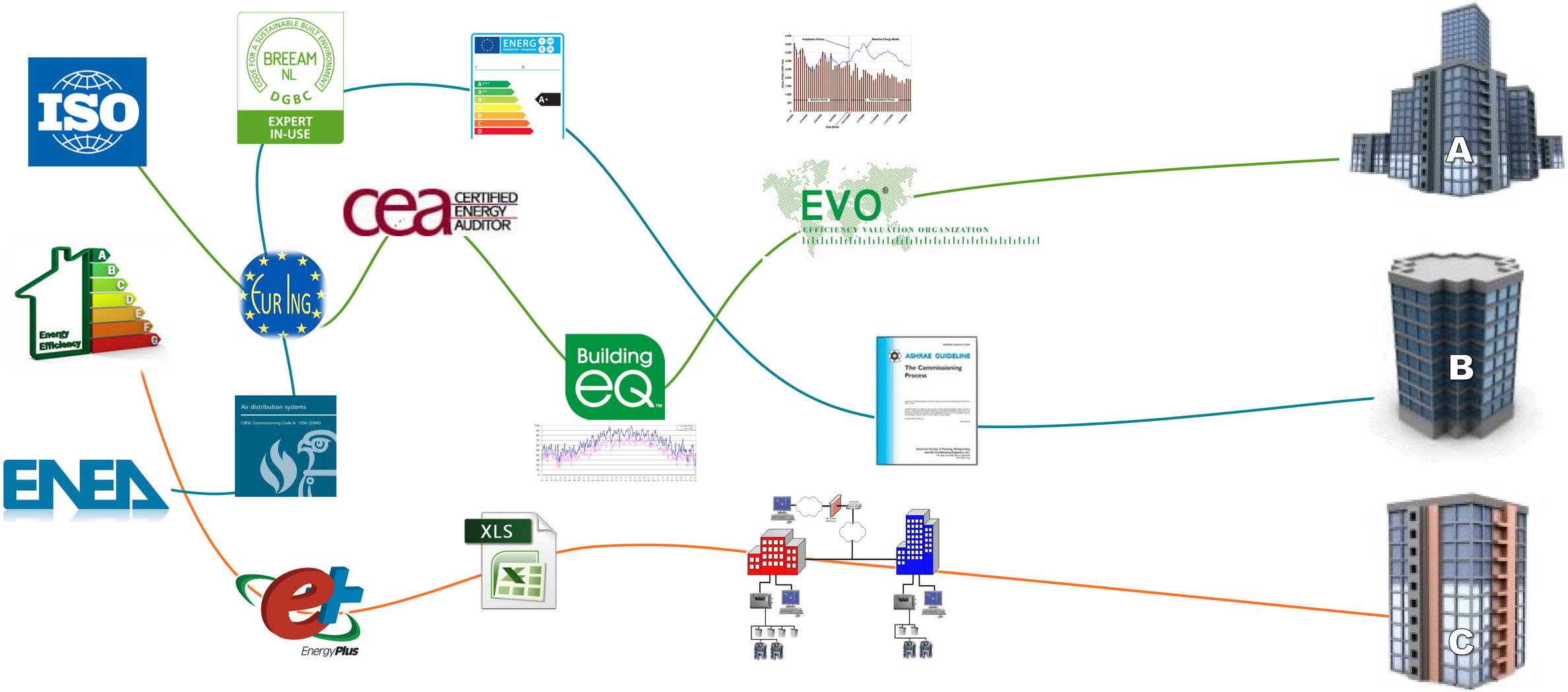
- You are all muted by default to minimize background noise, but we want your participation!
- You can ask questions either using the chat box on the gotowebinar control panel anytime
- We will stop at the end of each section for QA
- We will use a poll facility to assess comprehension and guide interaction
- At the end we will have an open QA session
- We will get back to you if there is any question we cannot answer in the course of this session
- This is part of the process towards becoming a member of the network and should take a maximum of 2 hours + QA
- We ask that attendees be present for the full training session in order to be eligible to take the QAA test and apply for the networks

Strategic Approach

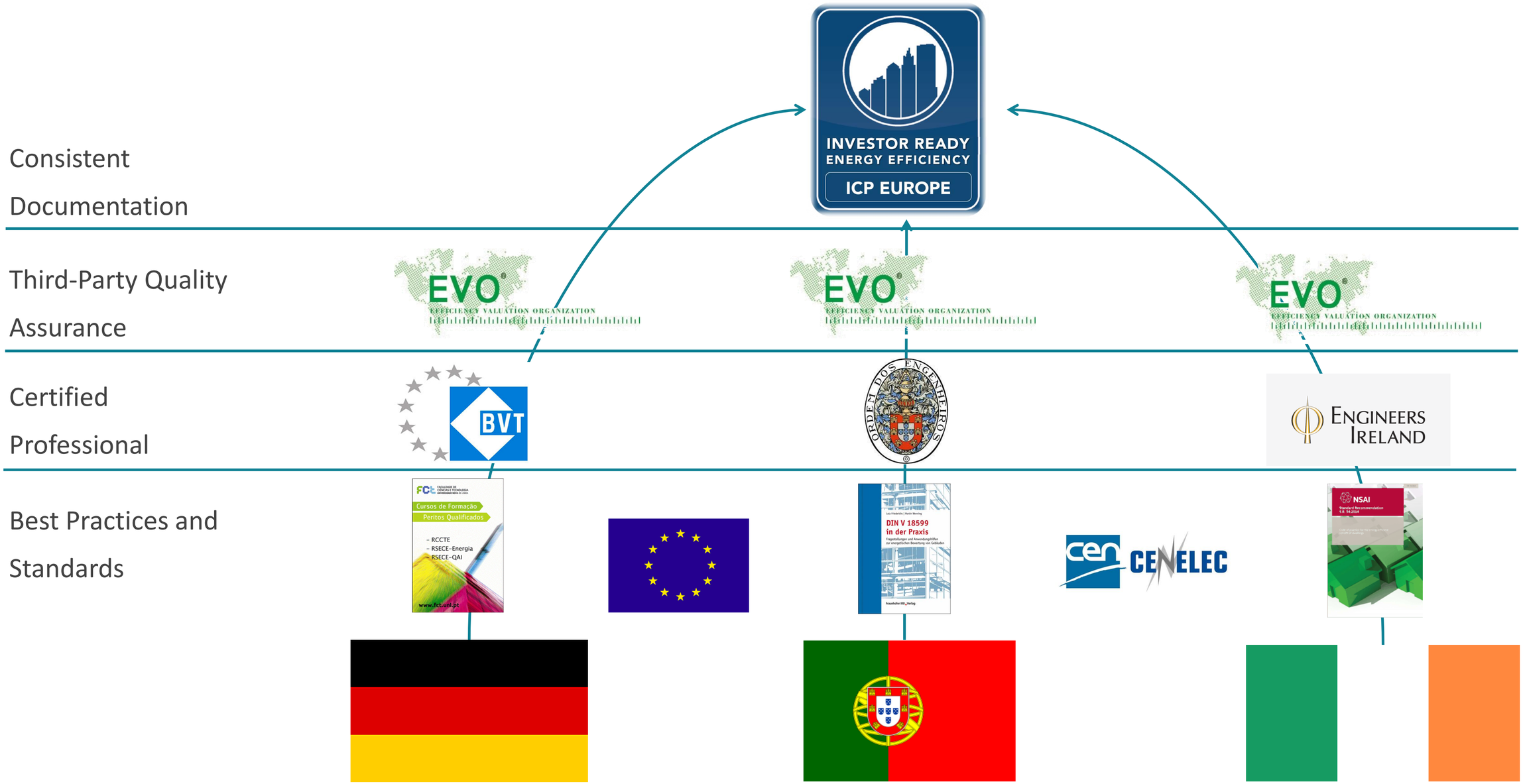
- All participants are knowledgeable and experienced professionals
- This training is only the beginning of a longer journey
- ICP Project Developers and Quality Assurance Assessors are crucial agents for the success of our scheme and the transformation of the Energy Efficiency market

What is the Investor Confidence Project?

Lack of Standardisation = Greater Risk



Investor Ready Energy Efficiency Project



Ensures transparency, consistency and trust-worthiness through **best practice and independent verification.**

An international framework for reducing owner and investor risk, lowering due diligence costs, increasing certainty of savings achievement and enabling aggregation.

Procedures

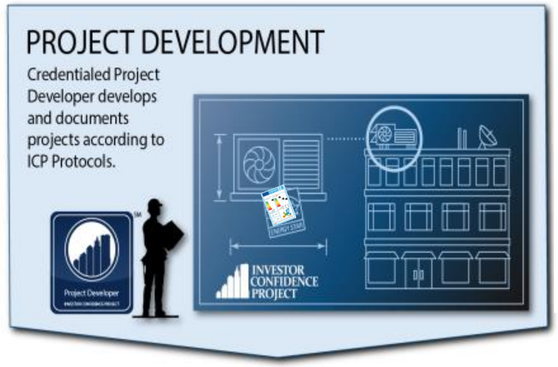
- Best Practice Workflow
- Standard Industry Practices

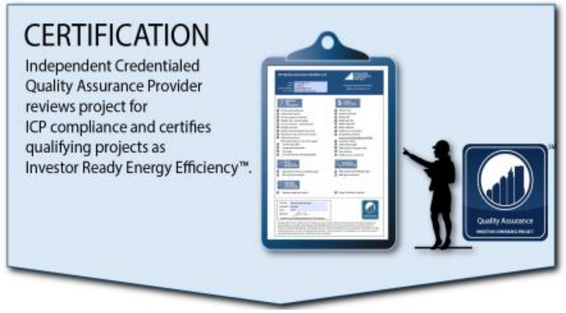
Documentation

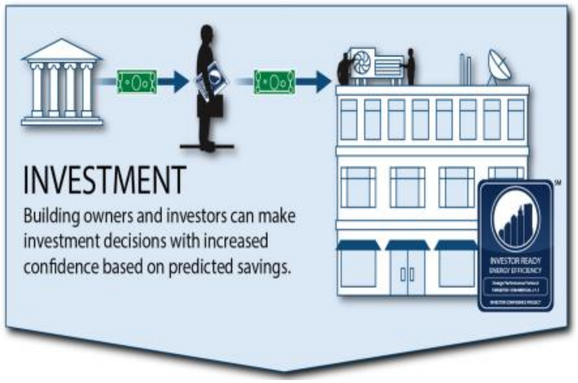
- Standard Documentation Package
- Itemized Outputs Required

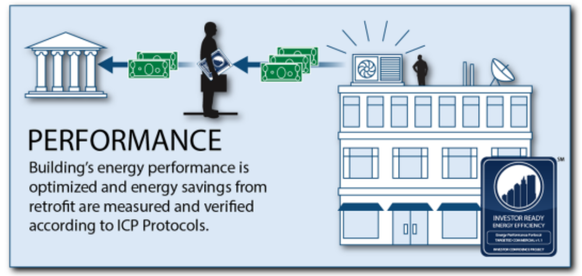
The IREE™ Certification is delivered prior to investment decision

INVESTOR READY ENERGY EFFICIENCY℠
Energy Performance Protocol
LARGE MULTIFAMILY v1.0a
INVESTOR CONFIDENCE PROJECT



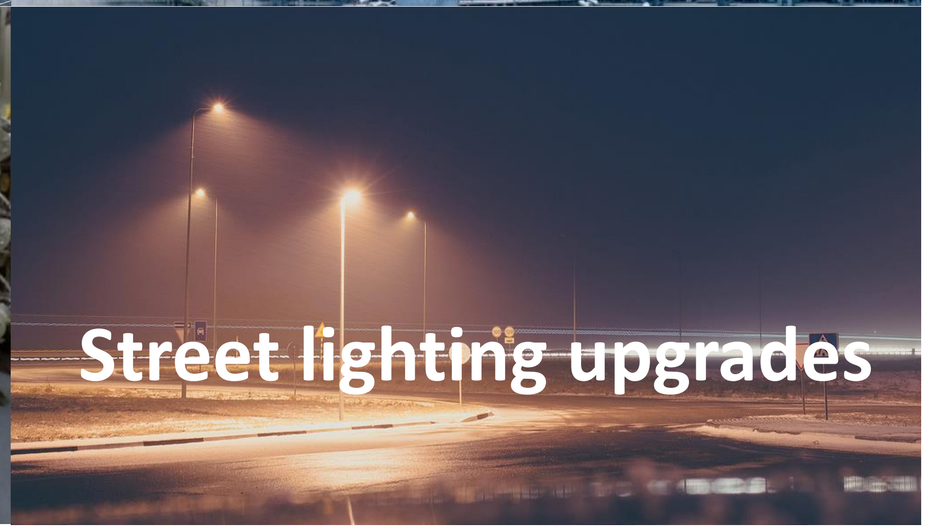






Development Period | **Underwriting Period** | **Invest** | **Performance Period**

What project types is IREE™ designed for?



Industry and Energy Supply Project Types

Complex

Installation of new technology types or capacities/ECMs with variable loads

Targeted

Installation of simple technologies/ECMs which are like-for-like replacement

Important facts to remember

- Any EE project that follows state of the market origination processes already does "everything ICP requires" **– ICP is an overarching standardizing layer to the process**
- ICP supports best practices standards, tools or engineering methodologies already in the market place
- ICP is flexible and adaptable to different project complexity and investment levels
- There is nothing like ICP in the global market – relevance of the Performance Period for persistence of savings

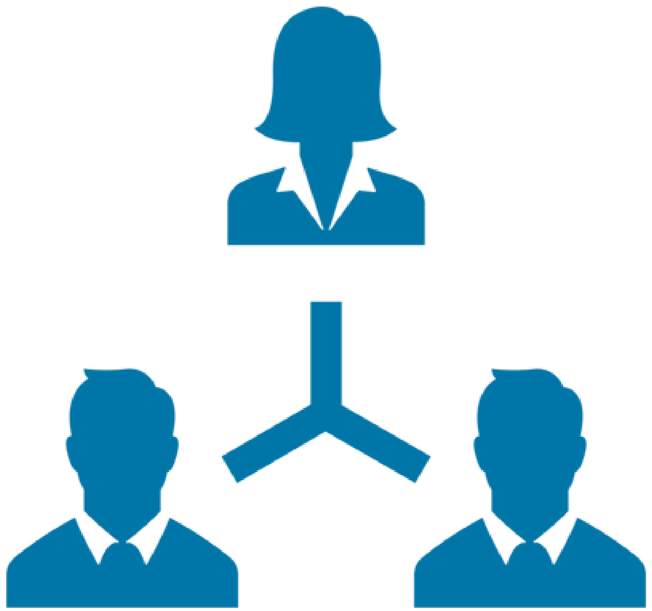
Roles and Responsibilities

ICP Project Developer

- Complete training
- Meet qualification and experience requirements
- Quick and easy process to join the network
- Insurance must meet needs of project owner (reviewed by QAA on per project basis)
- Where projects include process-specific ECMs:
  - Demonstrate experience in similar process/technology
  - Involve an experienced specialist

Third Party

- Someone who may be indirectly involved with, but is not a principal party to, an arrangement, contract, deal, or transaction
- ICP requires third-parties for:
  - Measurement and Verification (third party oversight is required as a minimum)
  - Quality Assurance



ICP Quality Assurance

- Energy efficiency investors lack expertise
- Multiple investors separately evaluating a project = time and money wasted
- QA Assessor
  - Independent
  - Represent the investor’s interests
  - Ensures project conforms to ICP protocols
  - Can also be an ICP Project Developer

Quality Assurance ‘Specialists’

- Bespoke process ECMs
- Spreadsheet calculations
- Implementation costs / investment criteria
- Commissioning (OPV)
- Measurement and verification

Project Developer Responsibilities

- Represents project owner’s interests
- Components clearly identified and organised
- Available to QA Assessor and others as appropriate
- Develop and assemble documentation **(investment)** package:
  - Select the correct protocol
  - Submit all documentation required by protocol
  - Ensure calculations are fully transparent, and all assumptions documented and explained

QA Assessor Responsibilities

- Ensure project was developed in accordance with the *most appropriate ICP Protocol*
- Validate that all necessary *documentation* is provided and complete
- Check methodologies, assumptions, and results *(technical review)*
- Complete the ICP Checklist
- Issue the IREE™ certification

ICP QA Checklist Qualifier

"By signing the ICP QA checklist, the ICP Quality Assurance Assessor attests to having reviewed the project development documentation and finds that the project is consistent with the ICP Protocol as deemed applicable to the project based upon the data that are available. *This Quality Assurance review and signature does not constitute a guarantee of energy savings performance, nor does it signify that the reviewer is taking professional responsibility for the required documents and engineering produced by the credentialed Project Developer.*"

Project Team Communication

- Involve QAA early on in project development
- Maintain professional perspective and independence
- Collaborative approach
- Ask for clarifications

Process and tools available

Project Development Tasks

STAGE	Develop Baseline	Savings Calculations / Investment Package	Design, Construction & Verification	Operations, Maintenance & Monitoring	Measurement & Verification
PROJECT TASKS	Work with the M&V specialist to define the measurement boundary	Develop a set of recommended ECMs	Appoint an Operational Performance Verification resource	Select and document ongoing management regime e.g. SCADA / aM&T	All Options: Develop M&V plan
	Establish the baseline period	Perform model / spreadsheet calculations	Develop OPV plan	Develop OM&M plan	Option A/B: Collect post-retrofit energy / performance data
	Collect energy source data, production, weather and other significant variable data, and utility rate schedules	Develop costs / constructability	Develop systems manual (if one does not exist)	Develop operator's manual (if one does not exist)	Option A/B: Performance data analysis
	Develop energy balances	Develop investment package	Update systems manual (if one already exists)	Update operator's manual (if one already exists)	Option A/B: Verified savings calculations
	Calendarise the independent variable data	Develop ECM report	Perform facility/network operators training	Develop and perform facility/network operators training	Option C: Post-utility data
	Establish the energy-use characteristics of the equipment or system which are within the measurement boundary				Option C: Identify / quantify non-routine adjustments
	Develop the baseline energy consumption model and test accuracy				Option C: Regression based analysis
	Establish peak demand and pricing				
	Chart average daily demand				

Key	
	All protocols
	Targeted protocol has adapted / less stringent requirements as detailed in the protocol document
	Complex protocol only
	Applicable for targeted protocol. Only applicable for complex protocol if IPMVP Option B is selected.

Quality Assurance Tasks

STAGE	Develop Baseline	Savings Calculations / Investment Package	Design, Construction & Verification	Operations, Maintenance & Monitoring	Measurement & Verification
QUALITY ASSURANCE TASKS	Review and approve selected baseline period	Review and approve ECM report including baseline, facility/network and/or systems and ECM descriptions, savings calculations, performance and cost analysis	Review and approve credentials of individual responsible for OPV	Review and approve OM&M plan, setting out procedures	Review and approve credentials of individual responsible for M&V
	Review and approve utility data and rates, signficant variable data and energy baseline	Review and approve credentials of individual responsible for energy model/savings calculations	Review and approve OPV plan	Review and approve selected ongoing management regime	Review and approve M&V plan
	Review and approve energy consumption model	Review and approve savings spreadsheet calculations, including supporting data	Review and approve systems manual (if one exists)	Review and approve operator's manual (if one exists)	Option C: Review and approve performance-period utility data (12 months), regression based model, and adjustment calculations
	Review and approve energy balances	Review and approve supporting costs / constructability information	Review and approve training (interview facility/network operators)	Review and approve training (interview facility/network operators)	Option A/B: Review and approve monitored data files, data analysis results, and revisions to savings calculations
	Review and approve load profiles and interval data	Review and approve investment package	Option A/B: Ensure pre-retrofit energy / performance data collected		Review and approve adjustments and proper application

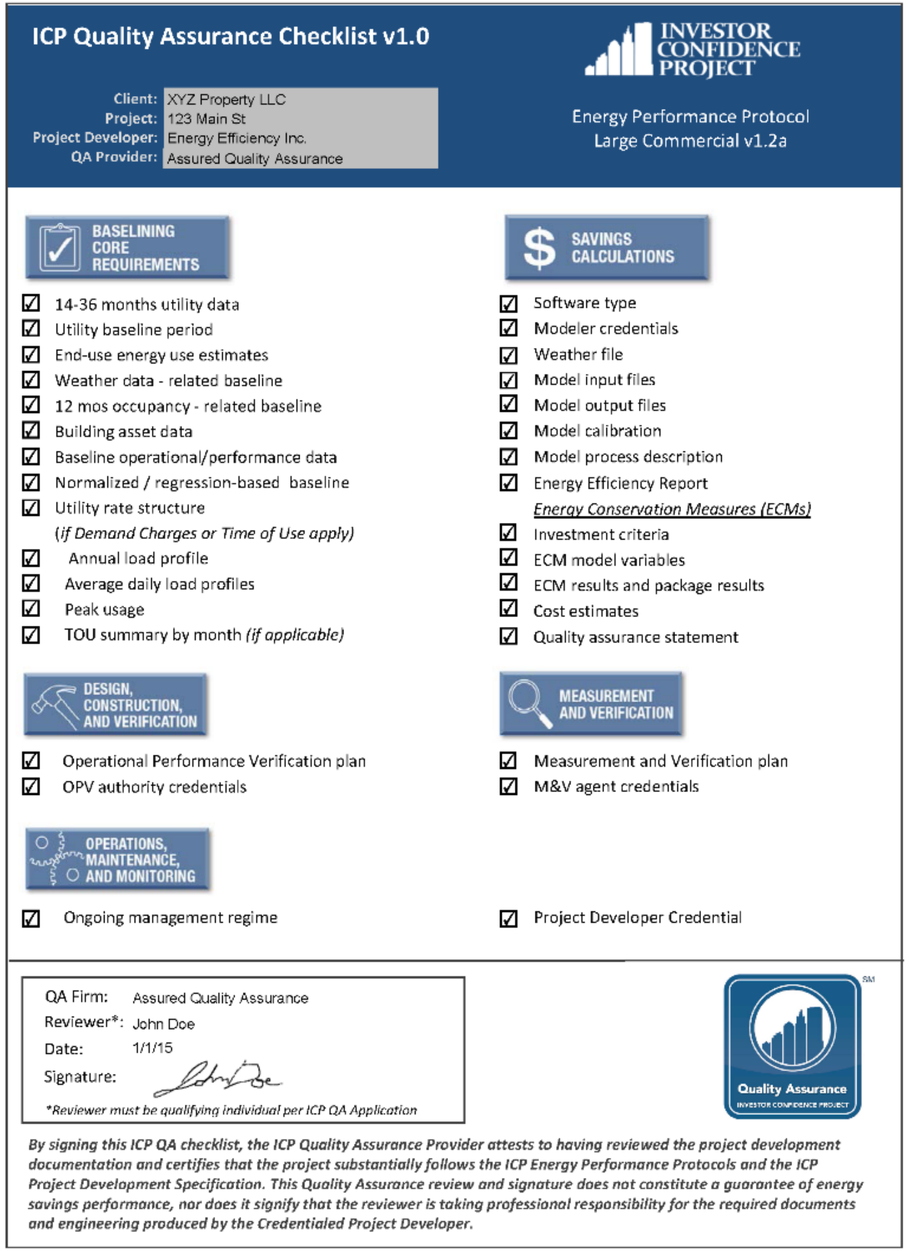
Key	
	All protocols
	Targeted protocol has adapted / less stringent requirements as detailed in the protocol document
	Complex protocol only
	Applicable for targeted protocol. Only applicable for complex protocol if IPMVP Option B is selected.

Project Acceptance

- Descriptions of deficiencies and issues
  - Documentation requirements
  - Methodologies, assumptions, and results
- Reasonableness
  - Document how items were resolved, or why they were left open
- Complete and sign the QA Checklist
- Project certified as IREE™

Quality Assurance Tools

- ICP QA Checklist
- ICP PD Specification
- Project Registry



ICP Quality Assurance Checklist v1.0

INVESTOR CONFIDENCE PROJECT

Energy Performance Protocol
Large Commercial v1.2a

Client:	XYZ Property LLC
Project:	123 Main St
Project Developer:	Energy Efficiency Inc.
QA Provider:	Assured Quality Assurance

BASELINING CORE REQUIREMENTS

- ☑ 14-36 months utility data
- ☑ Utility baseline period
- ☑ End-use energy use estimates
- ☑ Weather data - related baseline
- ☑ 12 mos occupancy - related baseline
- ☑ Building asset data
- ☑ Baseline operational/performance data
- ☑ Normalized / regression-based baseline
- ☑ Utility rate structure *(if Demand Charges or Time of Use apply)*
  - ☑ Annual load profile
  - ☑ Average daily load profiles
  - ☑ Peak usage
  - ☑ TOU summary by month *(if applicable)*

SAVINGS CALCULATIONS

- ☑ Software type
- ☑ Modeler credentials
- ☑ Weather file
- ☑ Model input files
- ☑ Model output files
- ☑ Model calibration
- ☑ Model process description
- ☑ Energy Efficiency Report

Energy Conservation Measures (ECMs)

- ☑ Investment criteria
- ☑ ECM model variables
- ☑ ECM results and package results
- ☑ Cost estimates
- ☑ Quality assurance statement

DESIGN, CONSTRUCTION, AND VERIFICATION

- ☑ Operational Performance Verification plan
- ☑ OPV authority credentials

MEASUREMENT AND VERIFICATION

- ☑ Measurement and Verification plan
- ☑ M&V agent credentials

OPERATIONS, MAINTENANCE, AND MONITORING

- ☑ Ongoing management regime

- ☑ Project Developer Credential

QA Firm:	Assured Quality Assurance
Reviewer*:	John Doe
Date:	1/1/15
Signature:	John Doe

**Reviewer must be qualifying individual per ICP QA Application*

Quality Assurance
INVESTOR CONFIDENCE PROJECT

By signing this ICP QA checklist, the ICP Quality Assurance Provider attests to having reviewed the project development documentation and certifies that the project substantially follows the ICP Energy Performance Protocols and the ICP Project Development Specification. This Quality Assurance review and signature does not constitute a guarantee of energy savings performance, nor does it signify that the reviewer is taking professional responsibility for the required documents and engineering produced by the Credentialed Project Developer.

ICP Quality Assurance Checklists

- Specific to each protocol (two checklists)
- Focuses on underwriting phase
- Required components and documentation
  - Baselining
  - Savings Calculations
  - OPV
  - OM&M
  - M&V

ICP Project Development Specification

- Supplements protocols
- More detailed guidance on requirements in protocols
- Additional resources
- Linked to protocol sections

ICP Project Registry

Project Name *

Protocol *

Large Commercial

Protocol Version # *

Project Description *

Quality Assurance Provider *

QA Reviewer Name *

QA Reviewer Email *

Project Developer *

QA Reviewer Phone #

Project Developer ICP Credentialed?

Yes

QA Reviewer ICP Credentialed?

Yes

Building Owner Organization/Name *

Questions and polls

ICP Stages - Requirements

1. **Baseline Development**
2. Savings Calculations
3. Design, Construction & Verification
4. Operations Maintenance & Monitoring
5. Measurement & Verification

Baseline Development

Procedure	Complex	Targeted
Normalised baseline (energy consumption equation)	✓	Maybe
Energy end-use consumption	✓	✓
Weather data	✓	✓
Production data	✓	✓
Site asset, operational, performance data	✓	✓
Retrofit isolation baseline	-	Maybe
Load shapes (when interval data available)	✓	✓
Interactive effects	✓	✓

Where relevant to the ECMs

Baseline Development

Data Collection

- Collect historical energy use and cost data
  - Define measurement boundary
  - At least one full energy-use cycle (where Option C is used, usually minimum 12 months)
  - Electricity, on-site fuel for heating and cooling, district steam, and hot water or chilled water, renewable energy
  - Calendarise if necessary
  - Energy balances for systems associated with proposed ECMs

PDS section 4.2.1

EN 16247-1 Energy audits – General requirements
EN16247-3 Energy Audits – Processes (for industrial projects)
ISO 50002 Energy Audits – Requirements with guidance for use
PDS section 4.2.5

Baseline Development

Regression-based model

- Develop an energy-use equation
  - Achieve an appropriate goodness of fit of energy data variability to independent variables
  - Perform regression analysis
    - For any project type, initial check on R-squared – in some industrial cases it may be hard to achieve a high R-squared value
  - Model should be evaluated on the basis of predicted savings: must be **greater than twice the standard error of the baseline value**
  - Uncertainty analysis not required, but recommended
  - Proprietary tools may be available

IPMVP: Statistics and Uncertainty for IPMVP 2014 section 1

Baseline Development

Energy end-use consumption/Weather/Production/Occupancy

- Estimate or measure end-use energy use
  - Calibrate baseline energy model
  - Calibrate energy savings estimates
- Collect weather data and production data corresponding to the baseline period
  - At least one full energy-use cycle (where Option C is used, usually minimum 12 consecutive months)
  - e.g. production quantities, production rate, raw material composition
- Collect occupancy data where available and where relevant to explaining variation in energy use within the measurement boundary
- Other independent variables e.g. raw material moisture content

Baseline Development

Asset, Operational, Performance Data

- Collect asset, operational, and performance data
  - Drawings, equipment inventories, surveys, tests, etc
  - Facility or network performance tracking
  - Analysis of ECMs
  - ECM implementation
  - ECM performance tracking

- Provide a summary of activities and processes

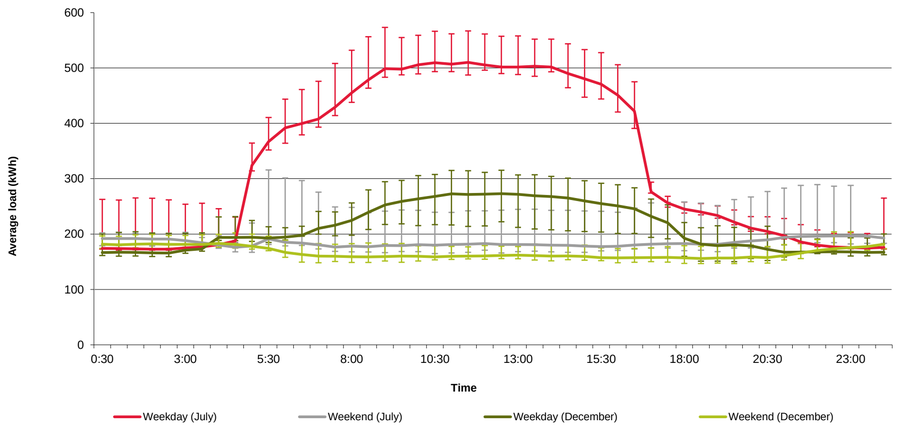
Retrofit Isolation Baseline

IPMVP Core Concepts 2016 Section 5.1

- ECM specific baseline
  - IPMVP Option A or B M&V approach
  - Same approach as whole facility/network baseline development
  - Define measurement boundary
    - Specific piece of equipment
    - Facility/network subsystem
    - End-use
  - Define
    - Constant / variable load
    - Constant / variable schedule

Load Profiles – if demand charges/time of use pricing are in effect

- Determine impact on monetary savings
- Annual load profile - showing monthly consumption and peak demand
- Average daily load profiles - use 15-minute interval data (if available), to develop profiles for weekday/weekend day types, all four seasons
- Time of Use summaries by month (if applicable)



Interactive effects

- **Secondary energy effects occurring as a result of ECMs** – usually associated with heating and cooling
- Estimate interactive effects with ECMs and between measures **where significant** compared to ECM energy savings, and either:
  - Adjust savings; or
  - Expand measurement boundary

PDS Section 2.4

Documentation

Protocol	Documentation
All	Baseline period (start and end dates)
All	Energy data
All	Access to all asset, operational and performance data
All	Utility rate structure
If applicable:	
All	Production & weather data (if relevant to project)
All	Interval data; sub-metered data; load profiles; monthly peak demand

Questions and polls

1. Baseline Development

2. Savings Calculations

3. Design, Construction & Verification

4. Operations Maintenance & Monitoring

5. Measurement & Verification

Savings Calculations

Procedure	Complex	Targeted
ECM descriptions	✓	✓
ECM savings calcs – models/spreadsheets	✓	✓
Investment criteria	✓	✓
Interactive effects	✓	✓
Fixed prices for each ECM	✓	✓
Investment package	✓	✓
Reporting	✓	✓

ECM Descriptions; Cost Estimates

- ECM descriptions
  - Present condition, proposed measure
- Cost estimates
  - At the feasibility stage, direct quotes or past experience can be used
  - **Final investment package must be based on contracted price**
  - Must include:
    - Construction feasibility review
    - Labour and materials
    - Line items for professional fees, engineering, commissioning, construction management, permitting, M&V, overhead and profit, contingency
- Long term financial analysis is optional

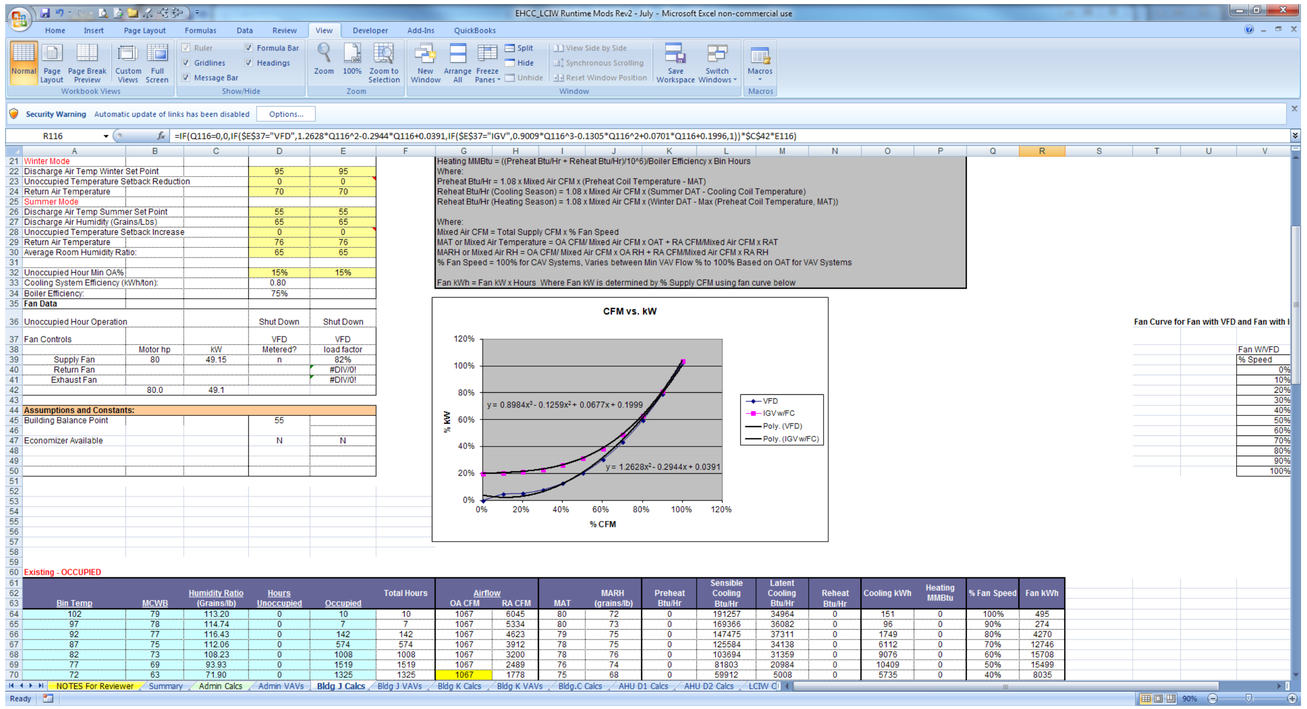
Investment Criteria

- Programmes and projects have individual criteria
  - ICP does not specify investment criteria to be used
  - Job of PD is to ascertain and inform preferred financial metrics
    - Implementation costs
    - Estimated savings
    - Available incentives
    - Effective useful life
    - Escalation rates
    - Interest rates
    - Discount rates
    - Cost of capital
    - Lease terms
    - Other appropriate financial inputs

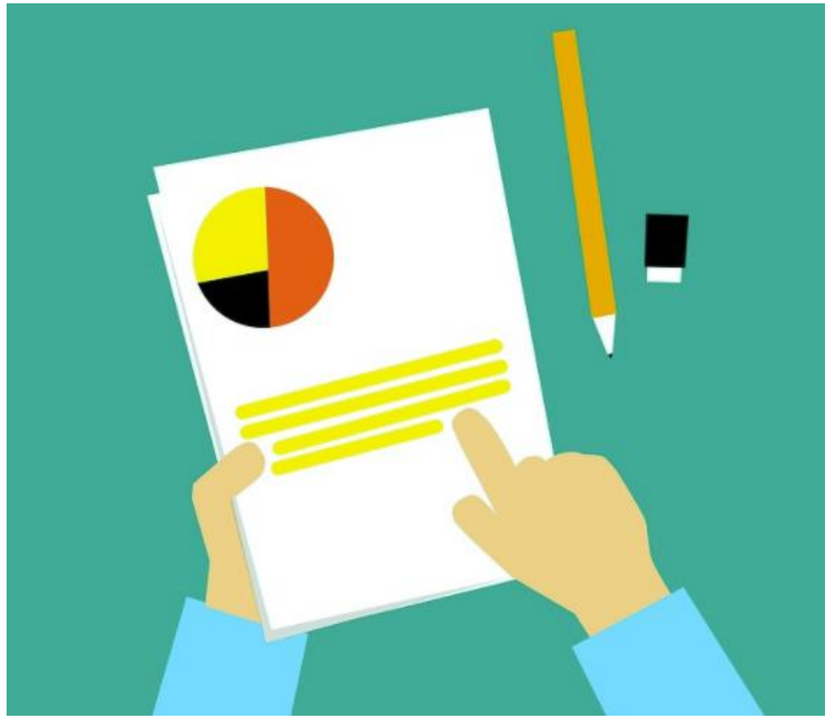
Savings Calculations

Spreadsheets and tools

- Analysis methods
  - Spreadsheet-based
  - Regressions analysis
  - Proprietary tools
- Interactive effects
- Weather file
- Assumptions and inputs
  - Documented
  - Never embedded
  - Reasonable



Report



- Summary report: industry-accepted format
  - Results
  - Methods used
  - Data
  - Pricing for each ECM and package of ECMs
  - Predicted energy savings by fuel type: energy consumption, % volume, cost savings

EN 16247-3 Energy audits – Part 3
Section 5.6

Documentation

Protocol	Documentation
All	Energy modeller/consultant qualifications
All	Process specialist experience
All	Where proprietary or third-party software has been used: input files; output files; weather file
All	Where open-book calculations have been used: calculation process description, workbooks, calculation tools; weather file
All	Basis for ECM costs
All	Summary report – including annual predicted energy savings by fuel type

Questions and polls

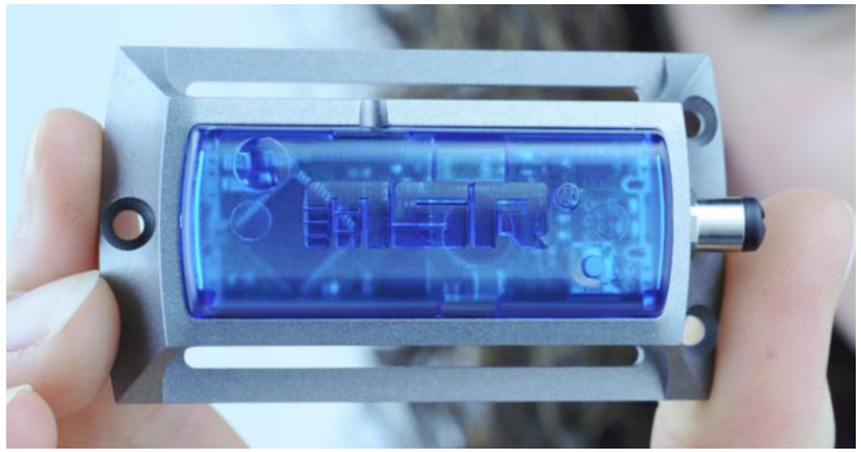
1. Baseline Development
2. Savings Calculations
3. **Design, Construction & Verification**
4. Operations Maintenance & Monitoring
5. Measurement & Verification

Design, Construction & Verification

Procedure	Complex	Targeted
Appoint an Operational Performance Verification (OPV) resource	✓	✓
Operational Performance Verification (OPV) plan	✓	✓
Operational Performance Verification (OPV) report	✓	✓
Training	✓	✓
Systems manual	✓	Maybe

Operational Performance Verification

- OPV approaches
  - *Visual inspection* - verify the physical installation of the ECM
  - *Spot measurements* - measure key energy-use parameters for ECMs or a sample of ECMs
  - *Pre-functional checklist / functional performance testing* - test functionality and proper control
  - *Trending and data logging* - setup trends or install data logging equipment and analyse data, and/or review control logic



Operational Performance Verification

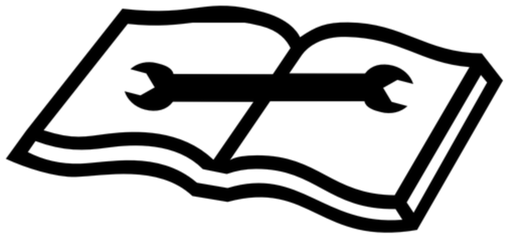
- OPV effort
  - Consultation with energy auditors
  - Monitoring of designs, submittals and project changes
  - Inspections of implemented changes
  - Means of reporting deviations from design
    - Help the client / PD team *fully install the measure properly* and then re-verify its performance; or
    - Work with the PD team to *revise the ECM savings estimates* using the actual post-installation data and associated inputs.

Operational Performance Verification

- OPV plan
  - Developed preconstruction
  - Verification activities: design review, etc…
  - Systems involved; roles and responsibilities
  - Target energy budget
  - Description of OPV report (Targeted: where appropriate to nature/scale of project)
  - Provisions to:
    - Use approved installers (where national certification schemes exist)
    - Develop training plan for operators (ECM descriptions, target performance, etc)
    - Update or develop Systems Manual

Systems Manual – Complex (Targeted: update if one exists)

- Systems manual
  - Facility or network design and construction (owner’s project requirements, current facility/network requirements, basis of design, construction/project record documents)
  - Operational requirements
  - Maintenance requirements and procedures
  - Commissioning process report: OPV plan, testing reports, issue and resolution logs
  - Training



Documentation

Protocol	Documentation
All	Qualifications of the OPV provider
All	OPV Plan

Questions and polls

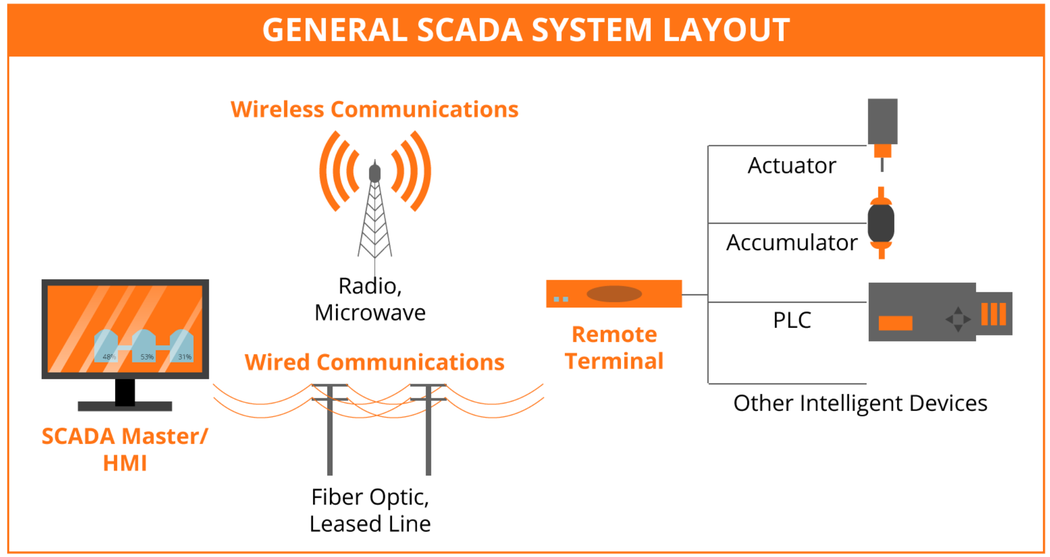
1. Baseline Development
2. Savings Calculations
3. Design, Construction & Verification
4. **Operations Maintenance & Monitoring**
5. Measurement & Verification

Operations, Maintenance & Monitoring

Procedure	Complex	Targeted
OM&M plan (ongoing management regime)	✓	✓
Training on OM&M procedures	✓	✓
Operators manual	✓	Maybe
Staff outreach	✓	✓

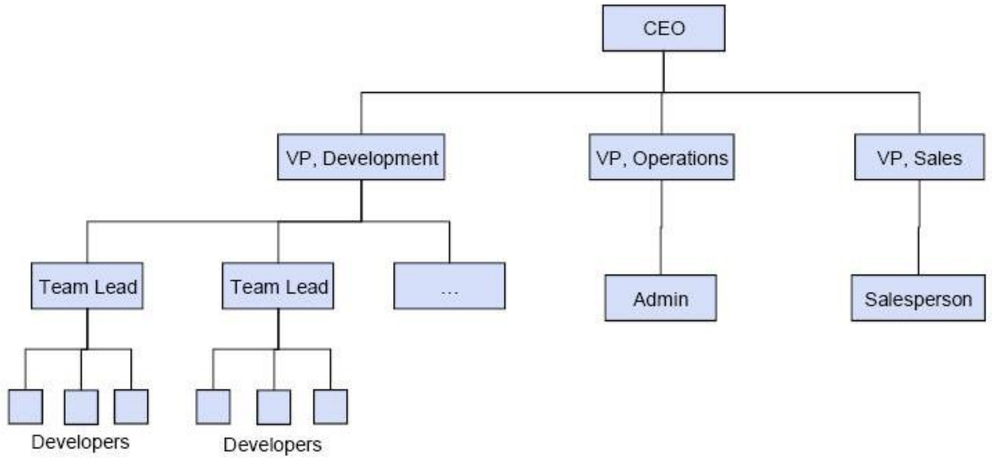
OM&M Plan

- OM&M procedures
  - Continuous improvement and monitoring
  - Tracking, analysing, diagnosing issues
  - Resolving issues
  - Maintain production levels/energy supply levels
- Methods include:
  - Periodic inspections
  - Automatic Monitoring and Targeting Reporting (aM&T)
  - Automated fault detection and diagnostic tools
  - Periodic data analysis
  - Supervisory Control and Data Acquisition (SCADA)
  - Periodic Recommissioning



OM&M Plan

- OM&M Plan: framework for ongoing management regime
  - Process and intent
    - Manual or automated tools or processes to use
  - Resources and established roles / responsibilities
    - Organisation chart
    - Technical qualifications for O&M
  - Quantifiable performance goals (based on performance indicators)
  - Provisions to:
    - Develop training plan for operators (ECM descriptions, target performance, issue resolution, etc)
    - Update or develop Operator’s Manual
    - Develop instructions for facility/network staff on ECMs



Operator’s Manual – Complex (Targeted: if one exists)

- Operator’s Manual
  - Often combined with Systems Manual
  - Photographs
  - Reduced-size as-built drawings and schematics
  - List of major equipment
  - Invoices for major equipment purchases and repairs
  - Balance reports
  - Equipment locations
  - Control system logic
  - O&M instructions
  - Training materials

Documentation

Protocol	Documentation
All	OM&M Plan (ongoing management regime)
All	Organisational chart

Questions and polls

1. Baseline Development
2. Savings Calculations
3. Design, Construction & Verification
4. Operations Maintenance & Monitoring
5. **Measurement & Verification**

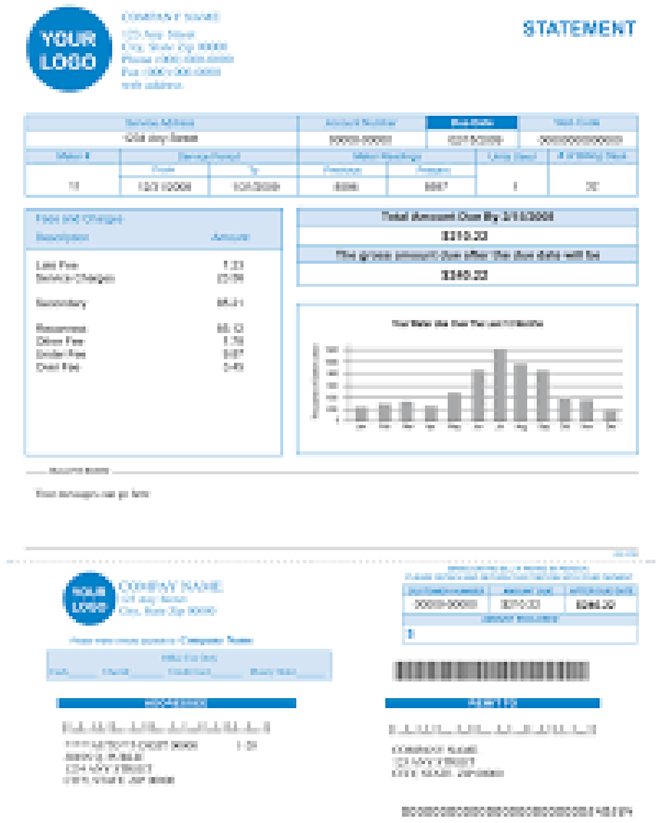
Measurement & Verification

Procedure	Complex	Targeted
Appoint an M&V resource	✓	✓
M&V Plan	✓	✓
Whole facility (Option C)	✓	-
Retrofit isolation – all parameters (Option B)	✓	✓
Retrofit isolation – key parameters (Option A)	-	✓
Collection of energy data	✓	✓
Verified calculations and Report	✓	✓

Option C

IPMVP Core Concepts 2016

- Whole Facility
  - Option C: Utility bill analysis
  - Complex protocol
  - Savings estimates > 10% facility energy use
  - Whole facility; interactions
  - Energy use equation/regression analysis
  - Routine and non-routine adjustments
  - Statistical evaluation
    - R2 > 0.75
    - CV[RMSE] < 15%
    - MBE +/- 7%
    - T-stat > 2.0



Option A and B

- Retrofit Isolation
  - Option A: Key parameter measurement
  - Option B: All parameter measurement
  - Targeted protocols, and sometimes Complex using Option B

IPMVP Core Concepts 2016

  - Specific to each ECM
  - Develop measurement boundaries
  - Estimated parameters

Process

- Follow IPMVP M&V process

1. Document baseline
2. Plan and coordinate M&V activities

Pre-construction

3. Verify operations
4. Gather data
5. Verify savings
6. Report results

Post-construction

M&V Application – Pre-construction

- M&V Plan
  - Compliant with IPMVP
  - Select appropriate Option(s)
  - Define routine and non-routine adjustments
  - Define measurement boundary
  - Define measurement period
  - Meter locations, accuracy
  - Collect baseline and post-construction data
  - Option A: estimated parameters

Section 7.1
IPMVP Core Concepts 2016

Performance Period Effects

Documentation

Protocol	Documentation
All	Qualifications of the M&V provider
All	M&V Plan
All	Routine adjustments
All	Pre-retrofit collected data (baseline period)

Questions and polls

Worked Examples

Example 1: Motor replacements on packaging lines in manufacturing plant

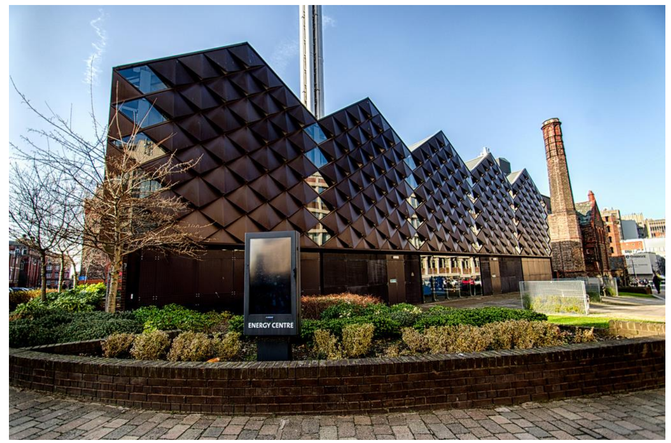
- Discrete measure - simple to estimate savings
- ECM is not bespoke, process-specific
- Measurement boundary to be drawn around each motor
- IPMVP Option A or B likely to be most appropriate
- **Targeted Industry and Energy Supply Protocol**
- Only the baseline associated with the motors needs to be developed
- A sampling approach can be adopted to energy audit, provided representative sample is selected

Example 2: Industrial site upgrade

- ECMs consist of lighting retrofit, upgrades to BMS, air handling unit improvements, installation of variable speed drives
- IPMVP Option C likely to be most suitable
- **Complex Industry and Energy Supply Protocol**

Example 3: Upgrading equipment in the Energy Centre

- Like-for-like replacement of motors, pumps etc
- ECMs are designed to improve system efficiency
- Measurement boundary to be drawn around equipment in Energy Centre only - IPMVP Option B likely to be most appropriate
- Baseline associated with equipment to be upgraded only
- **Targeted Industry and Energy Supply Protocol**



Questions and polls

Application Process

Application timeline

- A link to the PD and QAA applications will be sent to attendees of today’s training
- We ask that attendees be present for the full training in order to be eligible to take the QAA test and apply for the networks
- A link to test for QAA applications will also be sent
- Applications must be submitted by December 4th . We will contact you if we require additional information or clarifications on your submission
- Once our review is complete, we will notify you to confirm your official status as a member of the ICP PD/QAA network

Project Developer requirements

- List of individuals who will oversee ICP projects and their credentials - option 1 (**professional engineer**) or option 2 (**engineering/science degree plus additional certification**) – describe relevance of qualification
- Sign **Declaration of Honour** confirming **PD experience** across 5 ICP stages:
  - Baselining
  - Savings calculations
  - Design, Construction and OPV
  - Operations, Maintenance and Monitoring
  - Measurement and Verification
- **Acknowledge** ICP T&Cs and to information being correct
- **Company** logo and brief details
- Insurance on a per project basis

QA Assessor requirements

- List of individuals who will oversee ICP projects and their credentials - option 1 (**professional engineer**) or option 2 (**engineering/science degree plus additional certification**) – describe relevance of qualification
- Sign **Declaration of Honour** confirming **QA experience** across 5 ICP stages:
  - Baselining
  - Savings calculations
  - Design, Construction and OPV
  - Operations, Maintenance and Monitoring
  - Measurement and Verification
- **Acknowledge** ICP T&Cs and to information being correct
- **Company** logo and brief details
- **Take QAA test – online, 40 questions, 30 mins**
- Insurance on a per project basis

Questions and polls

Pilot Projects

ICP Europe Network Members

Thank You

Investor Confidence Project

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