



The Solutions Network
Rochester, New York

FEMP Detailed Option A Guidelines

Mark Stetz
Nexant
mstetz@nexant.com
303-402-2480



Detailed Guidelines: What?

- ❖ Addendum to FEMP M&V Guidelines 2.2.
- ❖ Serves as reference and resource for Option A compliant M&V methods.
- ❖ Provides minimum requirements for most Option A methods in Guidelines.
- ❖ Provides recommended 'best practices' for Option A methods.

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Detailed Guidelines: Why?

- ❖ 1999 report shows that Option A is most common in SuperESPC.
- ❖ Option A using 100% stipulated values very common.
- ❖ IPMVP 2001 now calls for '...at least one parameter to be measured'.
- ❖ And most importantly...

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Detailed Guidelines: Why?

Option A

≠

Stipulated Savings !!!

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Guideline Development

ASHRAE G-14
2000

NAESCO 1.3
1993

NEMVP
1996

IPMVP
1997

IPMVP
2000

IPMVP
2001

IPMVP
2005?

FEMP
1996

FEMP 2.2
2000

Detailed Guidelines
2002

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IPMVP 2001 vs FEMP 2.2

- ❖ MVP Option A now called "partially measured retrofit isolation". At least one parameter must be measured.
- ❖ M&V Goal: Minimize uncertainty in the savings estimate.
- ❖ FEMP 2.2 still allows 100% use of stipulations.
- ❖ M&V Goal: Allocate risks & responsibilities to the appropriate party.

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IPMVP 2001 vs FEMP 2.2

- ❖ IPMVP defines *generic* procedures that can be used for many different types of performance contracts.
- ❖ FEMP defines *specific* procedures that address risk allocation in ESPC. These risks are:
 - Meeting the savings guarantee.
 - Verifying equipment performance.
 - Minimizing usage risk (to ESCO).

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Current Status

- ❖ Detailed Guidelines released 2002.
- ❖ Incorporates 'best practices' by ECM.
- ❖ Statistics and uncertainty discussion added.
- ❖ Available at <http://ateam.lbl.gov/mv/>

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Highlights

- ❖ Use of "stipulate" now consistent with IPMVP 2001, e.g.
 - ❖ STIPULATE = NOT MEASURED
- ❖ Guidelines deviate from IPMVP - allows ALL values to be stipulated in certain cases.
- ❖ Standard lighting tables acceptable.

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Using the Guidelines

- ❖ The Guidelines provide
 - Appropriate use of stipulations
 - Acceptable sources of stipulations
 - Minimum M&V activities & reporting
 - Where FEMP deviates from IPMVP

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Appropriate use of Stipulations

- ❖ Agency willing to accept risk
- ❖ Agency has previous experience
- ❖ Probable success of ECM
- ❖ Small savings and/or small uncertainty
- ❖ Greater M&V costs not justified
- ❖ Stipulations don't add to uncertainty
- ❖ Monitoring serves no other purpose

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Inappropriate use of Stipulations

- ❖ Agency unwilling to assume risk
- ❖ Parameters not known with reasonable certainty
- ❖ Potential for technical problems
- ❖ Monitoring provides valuable information
- ❖ Stipulation significantly contributes to overall uncertainty

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Sources of Stipulations

Acceptable	Unacceptable
<ul style="list-style-type: none"> ❖ Engineering analysis ❖ Measurement-based models ❖ Manufacturer's data ❖ Standard tables ❖ TMY weather ❖ ANSI/ARI/ASHRAE ❖ Facility logs 	<ul style="list-style-type: none"> ❖ Undocumented assumptions ❖ Proprietary algorithms ❖ Unsupported handshake agreements ❖ Guesses at parameters ❖ Models based on questionable data ❖ Other buildings

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Required Minimum M&V Activities

- ❖ Baseline definition in DES with supporting information.
- ❖ Post-installation report with first-year estimates.
- ❖ Annual M&V verification - "potential to perform."
- ❖ Annual M&V reports.

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Measure-Specific Details

Measure Type	FEMP Method	IPMVP Compliant
Lighting Efficiency	LE-A-01	Yes*
	LE-A-02	Yes
Lighting Controls	LC-A-01	Yes*
	LC-A-02	Yes
Constant -Load Motor Efficiency	CLM-A-01	Yes
Variable -Speed- Drive Retrofit	VSD-A-01	Yes
Chiller Replacement	CH-A-01	No
	CH-A-02	Yes
Boiler Replacement	-	Yes
Energy Management & Control System	-	Yes
Water Conservation	WCM-A-01	No
	WCM-A-02	Yes
New Construction	NC-A-01	Yes
Operations & Maintenance	-	N/A
On-Site Generation	-	N/A
Renewable Energy Systems	-	Yes

* By considering lighting tables as measurements.

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Example: Lighting

LE-A-01	LE-A-02
<ul style="list-style-type: none"> ❖ No metering - fixture power based on 'standard tables'. ❖ Hours stipulated. ❖ Standard tables do shift some risk to Agency. ❖ Agency responsible for changes to operating hours. 	<ul style="list-style-type: none"> ❖ Measured fixture power on a sample of fixtures. ❖ Hours stipulated. ❖ ESCO responsible for performance. ❖ Agency responsible for changes to operating hours.

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Summary

- ❖ Guidelines move M&V closer to IPMVP compliance while retaining flexibility.
- ❖ Guidelines provide specific recommendations for each ECM.
- ❖ Guidelines promote M&V that satisfies legal intent and enforces guarantees.
- ❖ Guidelines address risk allocation equitably.

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