



**Southface** Homes Services

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# Realizing the Full Potential of HERS Ratings

by

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**Southface**

Responsible Solutions for Environmental Living



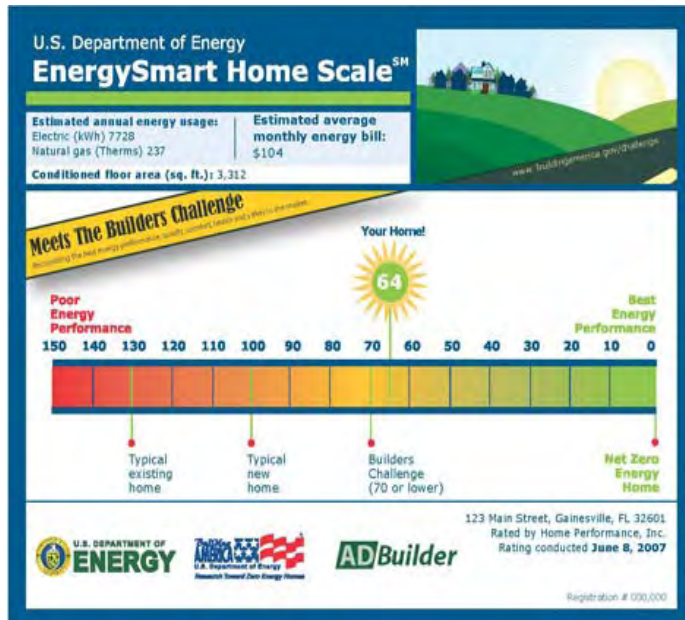
**Southface**  
Energy Rated Homes



TM



**LEED**  
FOR HOMES



# EarthCraft House

- Regional Green Building program in 8 states in Southeast
- ENERGY STAR is baseline for efficiency
- Also verifies durability, site management, water efficiency, and material use
- Nearly 10,000 homes certified since 1999



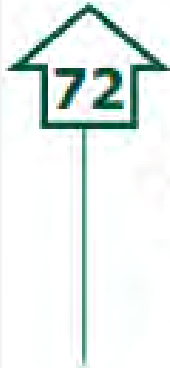
TM

# Realizing the Full Potential: EarthCraft Study

- Market EarthCraft program by highlighting energy & pollution savings
- REMRate files for 240 homes certified in 2007 in Atlanta
- Batch used to find average HERS index



TM



An EarthCraft House averages a 72 on the EnergySmart Home Scale which will use only 72 percent as much energy as a typical new home – at 100 on the scale – saving about 28 percent in energy use and utility bills.

## U.S. Department of Energy EnergySmart Home Scale<sup>SM</sup>

### ESTIMATED ANNUAL ENERGY USAGE

#### Standard Code Built house

Electric (kWh) 19,203  
Natural gas (Therms) 1,451

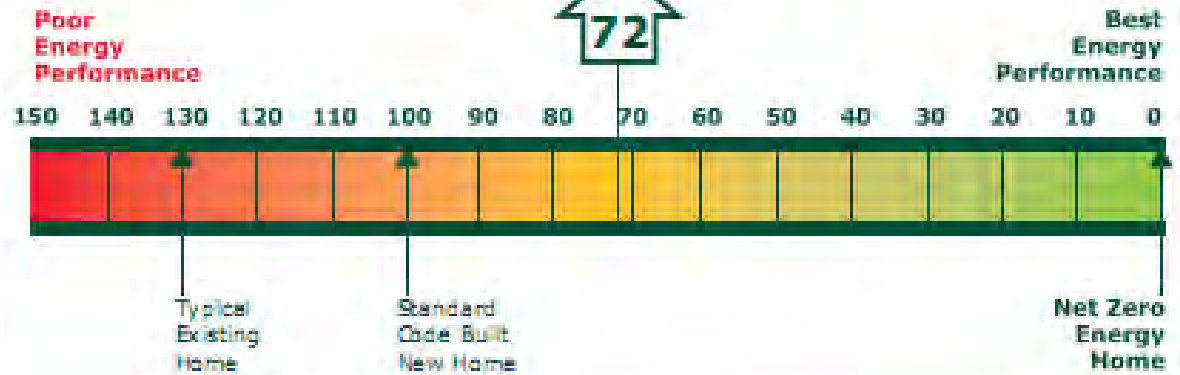
#### EarthCraft House

Electric (kWh) 16,875  
Natural gas (Therms) 962



[www.earthcrafthouse.com](http://www.earthcrafthouse.com)

### Average EarthCraft House



Average EarthCraft House Atlanta GA  
Rated by Southface Energy Institute  
Rating conducted 2007



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# Realizing the Full Potential: Objectives

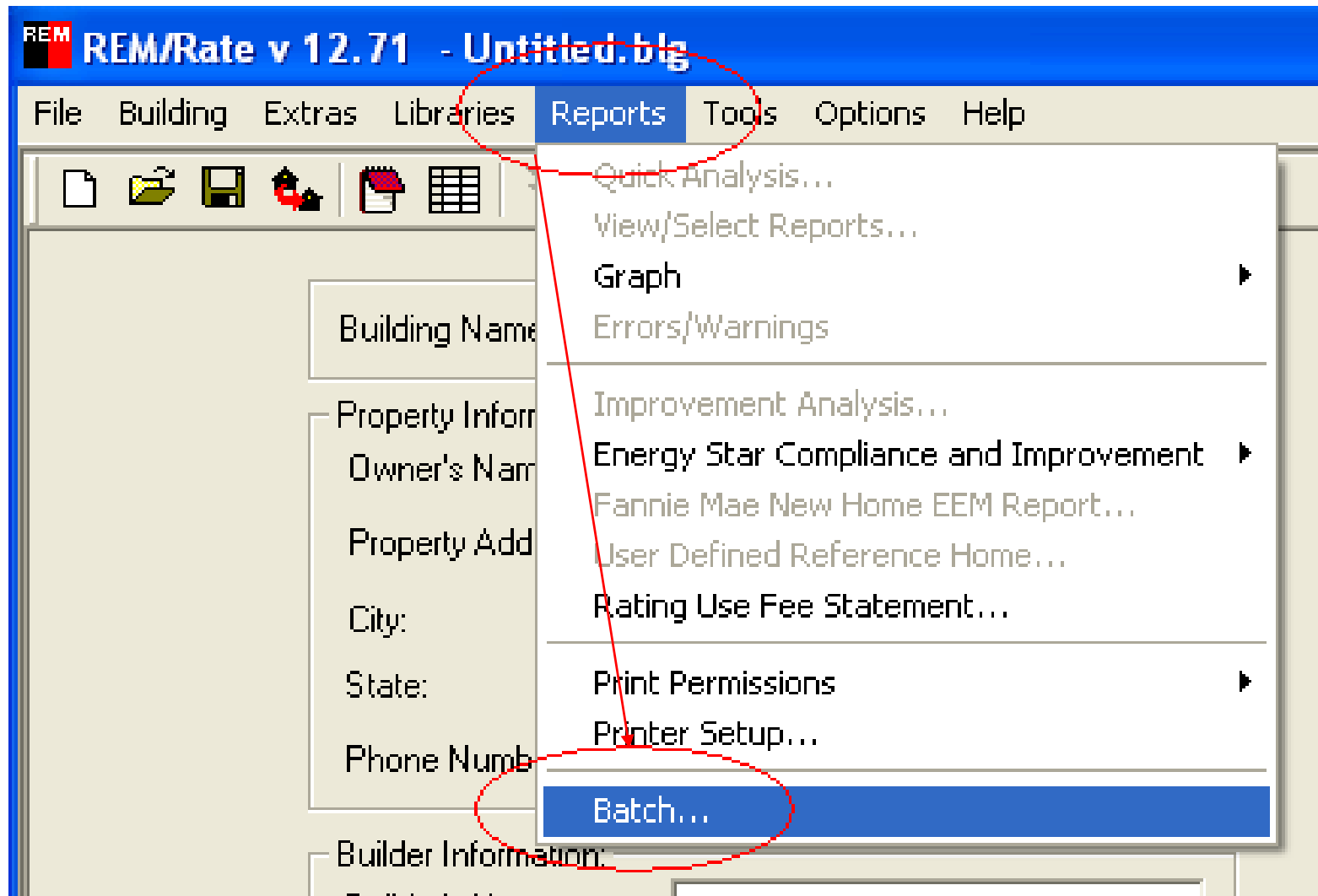
- What is batch mode?
- Where do I find it?
- How do I use it?
- Why it's useful
  - Reporting
  - Analysis
  - Modifications

# Realizing the Full Potential: Objectives

- Batch printing of reports
- Batch export of data using .CSV
- Create a database using REM/Rate
- Batch export of data using database
- Batch file modification of libraries
- Tying it all together to perform analysis

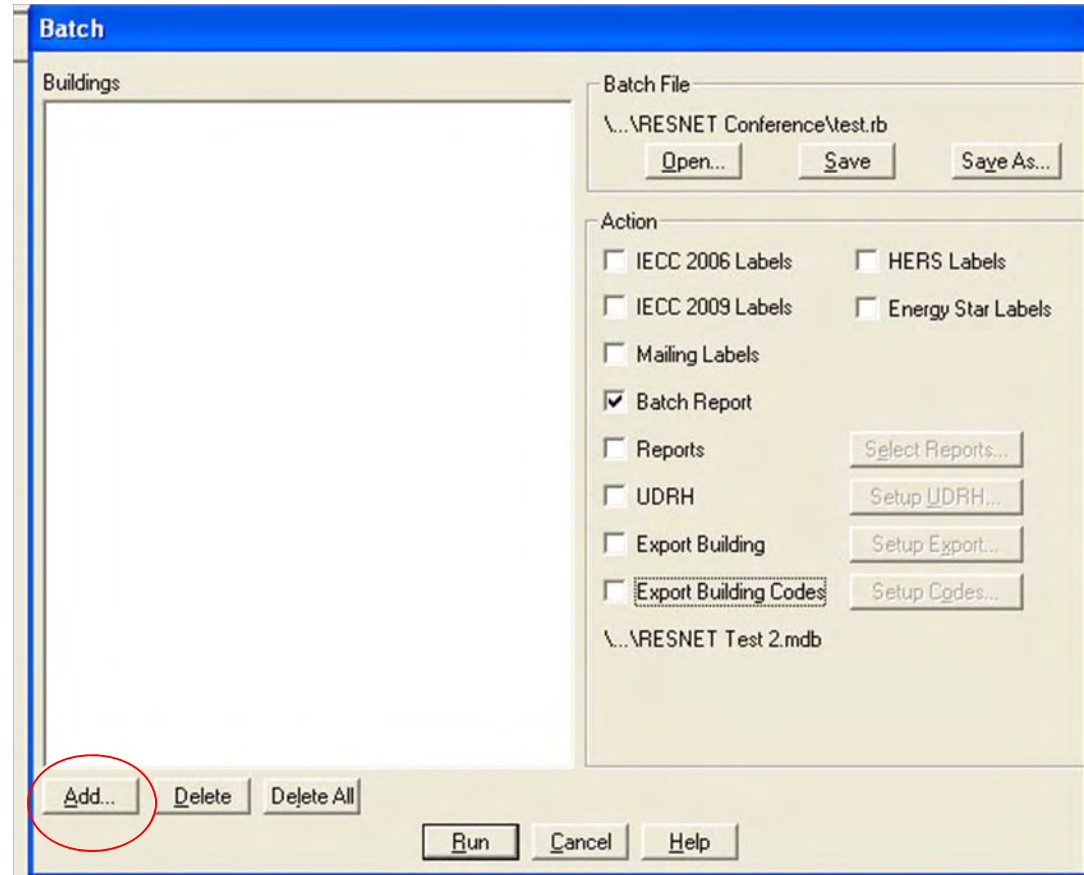


# Where to find Batch Function

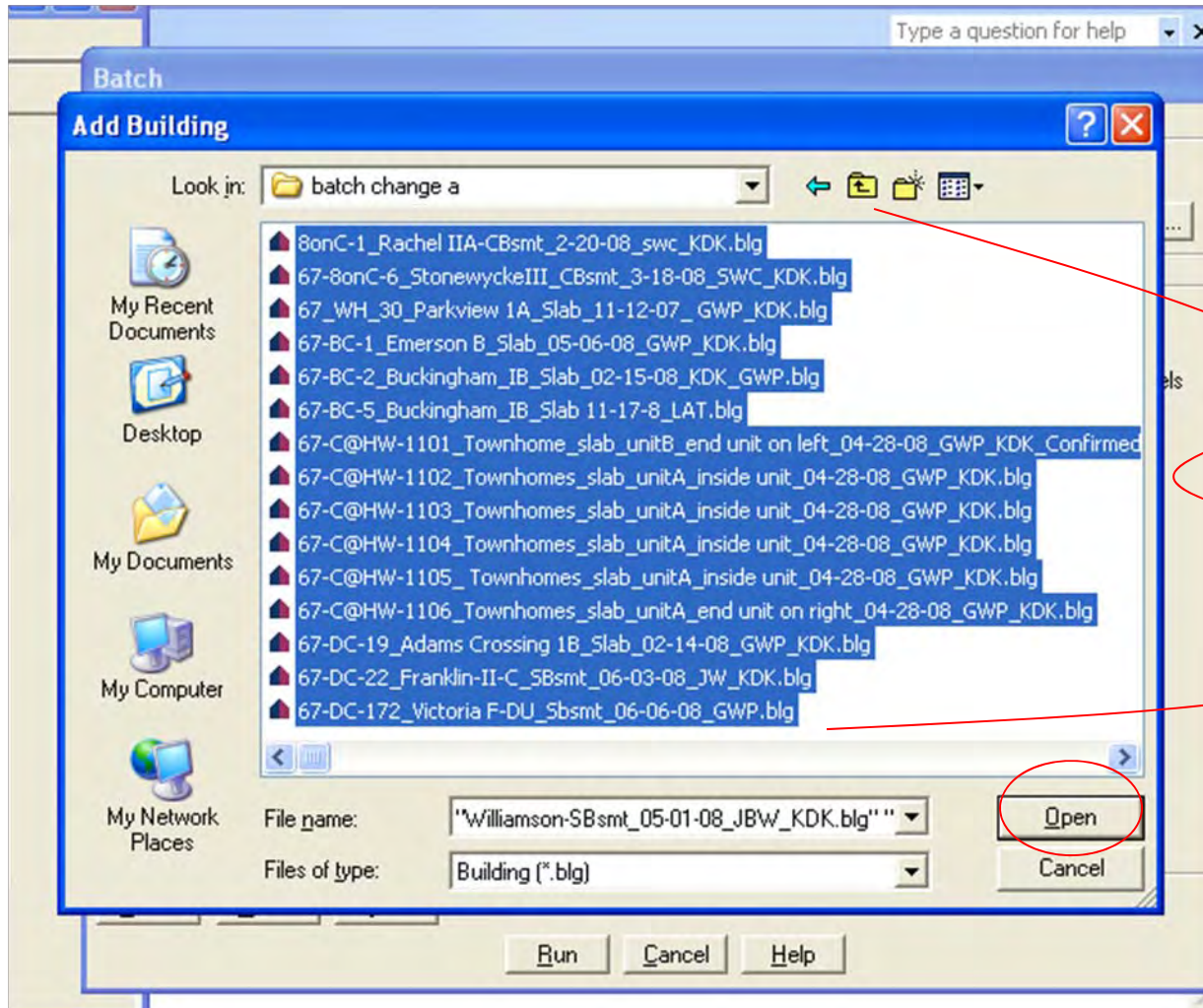


# Batch Analysis - Main Screen

- File folder first with ratings
- Add new files
- Save batch
  - Creates .rb file



# Adding Files to Run in Batch Analysis

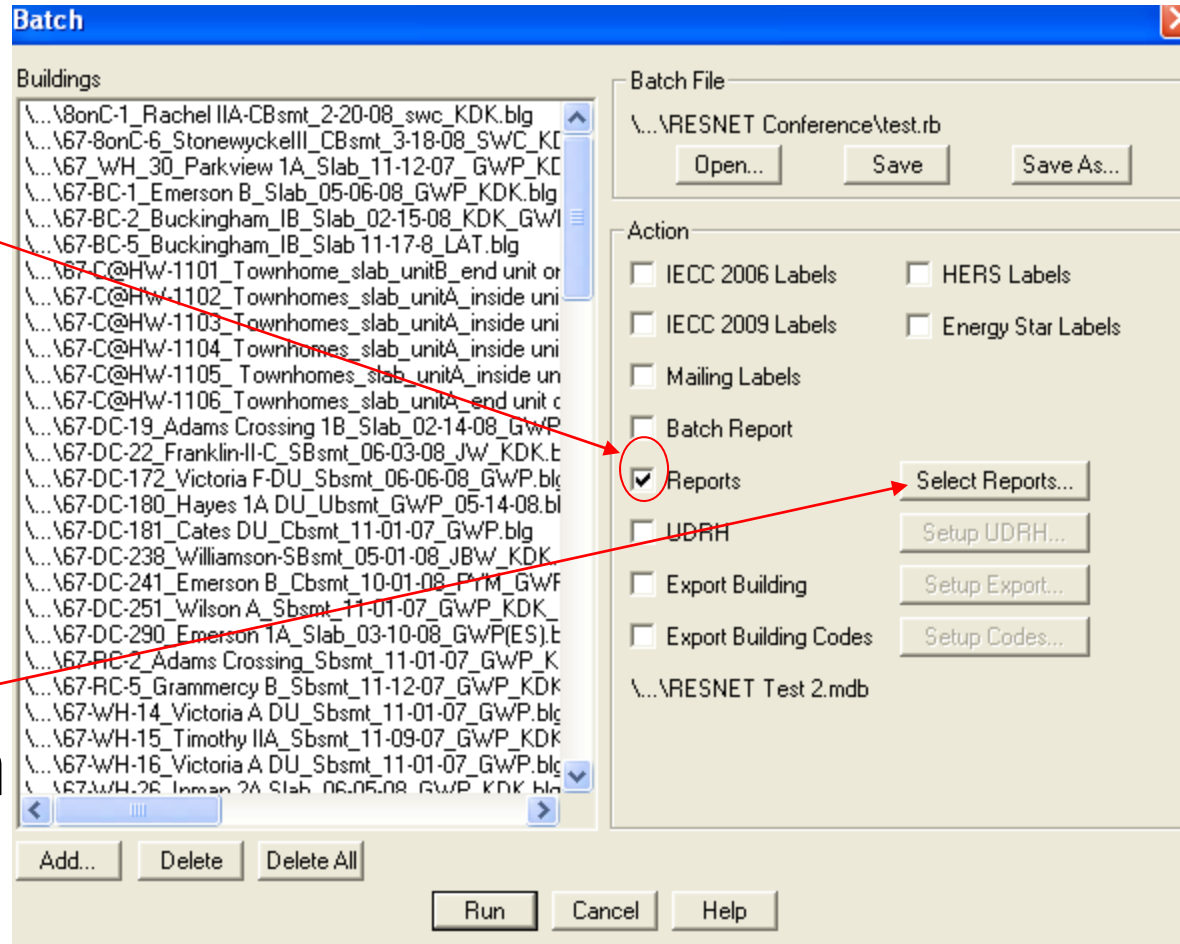


Select  
all  
desired  
files

# Batch Reports

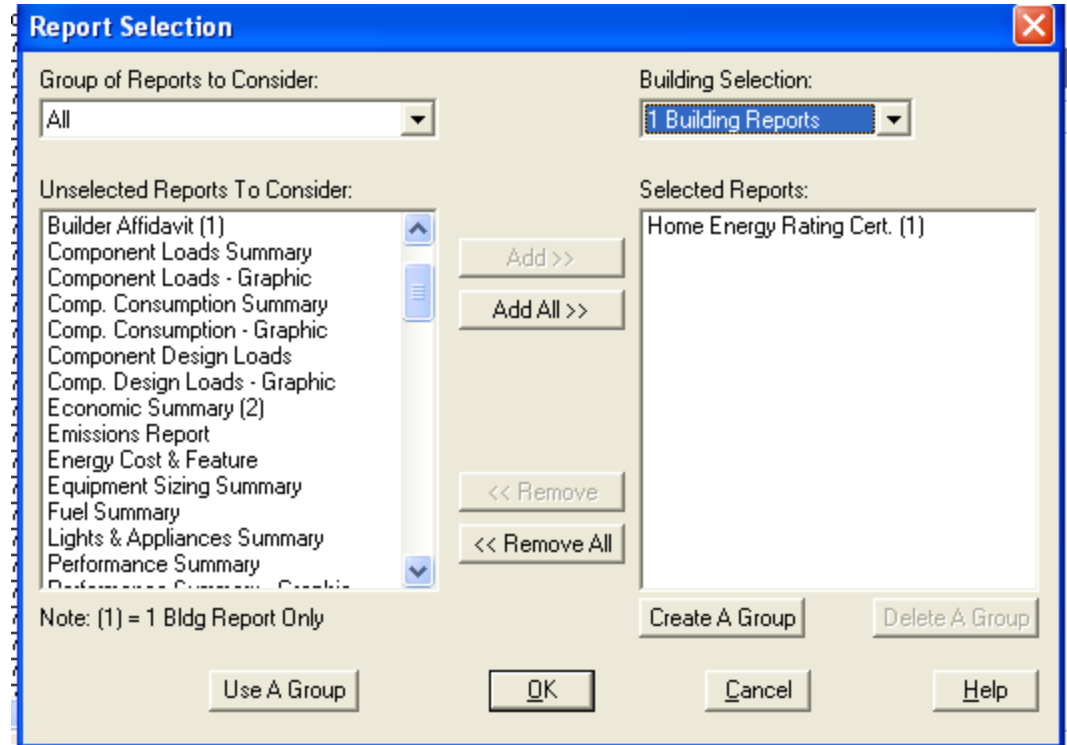
- Check “Reports”

- Push “Select Reports” button

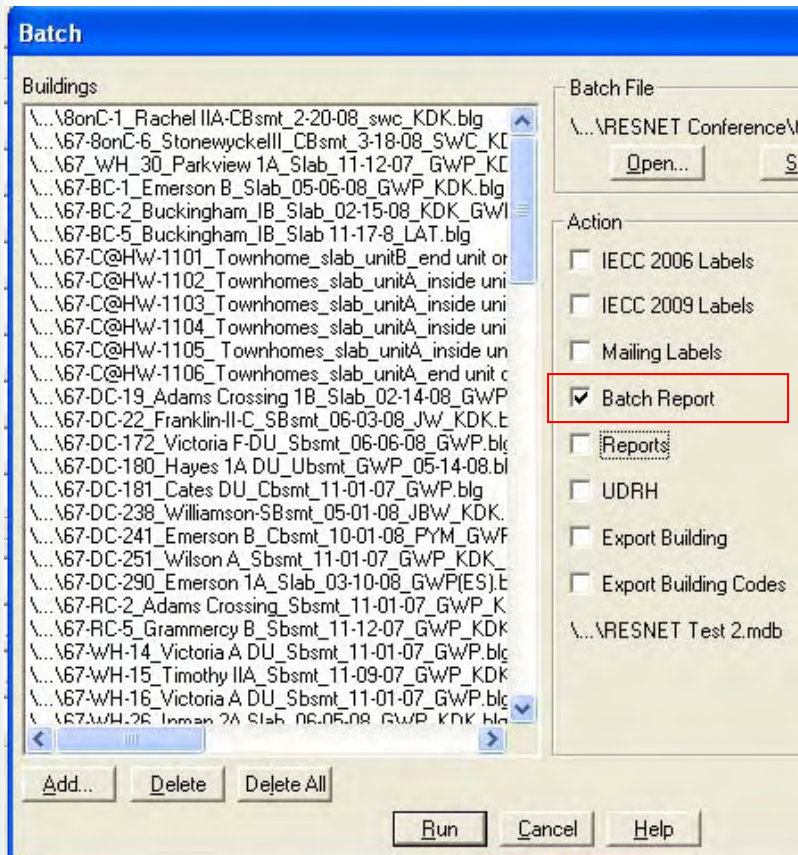


# Batch Reports: Selecting Reports

- Select and Add reports to “Selected Reports” section



# Batch Reports: "Batch Report"



BATCH REPORT

	Heating	Cooling	Water	Tax	Energy	HERS
Annual Load (MMBTU/yr)	Heating	Cooling	Heating	Credit	Star	Index
\\.\8onC-1_Rachel IIA-CBsmt_2-20-08_swk_KDK.blg	34.9	27.2	10.4	No	Yes	78
\\.\67-8onC-6_Stonewyckelll_CBsmt_3-18-08_SWC_KC	34.5	22.3	10.4	Yes	Yes	63
\\.\67-WH_30_Parkview 1A_Slab_11-12-07_GWP_KC	33.7	17.6	10.4	No	Yes	78
\\.\67-BC-1_Emerson B_Slab_05-06-08_GWP_KDK.blg	43.7	22.8	12.1	No	Yes	74
\\.\67-BC-2_Buckingham_IB_Slab_02-15-08_KDK_GW	35.4	19.8	12.1	No	Yes	78
\\.\67-BC-5_Buckingham_IB_Slab_11-17-8_LAT.blg	32.6	20.7	12.1	No	Yes	78
\\.\67-C@HW-1101_Townhome_slab_unitB_end unit or	29.1	21.7	11.4	No	Yes	84
\\.\67-C@HW-1102_Townhomes_slab_unitA_inside uni	20.0	17.8	11.4	No	Yes	81
\\.\67-C@HW-1103_Townhomes_slab_unitA_inside ur	19.8	17.7	11.4	No	Yes	81
\\.\67-C@HW-1104_Townhomes_slab_unitA_inside ur	20.0	17.8	11.4	No	Yes	81
\\.\67-C@HW-1105_Townhomes_slab_unitA_inside u	20.2	17.9	11.4	No	Yes	81
\\.\67-C@HW-1106_Townhomes_slab_unitA_end unit	27.2	20.5	11.4	No	Yes	81
\\.\67-DC-19_Adams Crossing 1B_Slab_02-14-08_GW	38.5	21.7	12.1	No	Yes	75
\\.\67-DC-22_Franklin-II-C_SBsmt_06-03-08_JW_KDK.	34.0	22.6	10.4	No	Yes	72
\\.\67-DC-172_Victoria F-DU_Sbsmt_06-06-08_GWP.b	28.7	20.9	10.4	No	Yes	77
\\.\67-DC-180_Hayes 1A DU_Ubsmt_GWP_05-14-08.b	31.9	19.8	10.4	No	Yes	81
\\.\67-DC-181_Cates DU_Cbsmt_11-01-07_GWP.blg	36.2	24.1	10.4	No	No	73
\\.\67-DC-238_Williamson-SBsmt_05-01-08_JBW_KDK.	32.9	22.1	12.1	Yes	Yes	66
\\.\67-DC-241_Emerson B_Cbsmt_10-01-08_PYM_GW	38.8	25.6	12.1	No	Yes	68
\\.\67-DC-251_Wilson A_Sbsmt_11-01-07_GWP_KDK.	38.4	28.1	10.4	No	Yes	71
\\.\67-DC-290_Emerson 1A_Slab_03-10-08_GWP(ES).	43.7	27.7	16.1	No	Yes	78
\\.\67-RC-2_Adams Crossing_Sbsmt_11-01-07_GWP_J	38.0	21.6	12.1	No	Yes	72
\\.\67-RC-5_Grammercy B_Sbsmt_11-12-07_GWP_KD	35.2	21.4	12.1	No	Yes	73
\\.\67-WH-14_Victoria A DU_Sbsmt_11-01-07_GWP.bl	28.9	20.9	10.4	No	Yes	73
\\.\67-WH-15_Timothy IIA_Sbsmt_11-09-07_GWP_KD	35.0	19.7	12.1	No	Yes	72
\\.\67-WH-16_Victoria A DU_Sbsmt_11-01-07_GWP.bl	30.1	20.4	10.4	No	Yes	73
\\.\67-WH-26_Inman 2A_Slab_06-05-08_GWP_KDK.bl	33.5	20.6	10.4	No	Yes	74
\\.\67-WH-27_Grammercy B_Slab_01-22-08_GWP_KC	33.6	21.4	12.1	No	Yes	74
\\.\67-WH-29_Lawton IF_Slab_11-21-07_GWP_KDK.b	28.3	19.8	10.4	No	Yes	78
\\.\67-WH-71_Abigail_Sbsmtwalls_11-06-07_GWP_KC	36.9	24.8	10.4	No	Yes	75
\\.\67-WH-74_Franklin-II-C_SBsmt_06-03-08_JW_KDK	30.8	24.3	10.4	No	Yes	78

# Batch Report: ENERGY STAR® Label

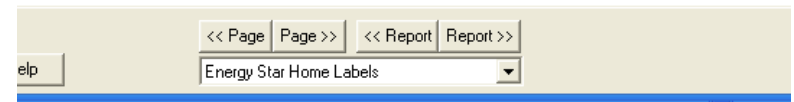
- Useful if printing off a batch of labels all at once
- Same can be done with:
  - IECC 2006
  - IECC 2009
  - Mailing Labels
  - HERS Labels

736 Liberty Commons Drive Atlanta, GA	734 Liberty Commons Drive Atlanta, GA
Brockbuilt, LLC	Brockbuilt, LLC
Southface	Southface
1.7.2010	1.7.10
HERS Index: 81	HERS Index: 81

732 Liberty Commons Drive Atlanta, GA	730 Liberty Commons Drive Atlanta, GA
Brockbuilt, LLC	Brockbuilt
Southface	Southface
1.11.10	1.11.10



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# Batch Log Report

- Appears every time run Batch Reports
- Useful in finding file errors and warnings

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BATCH LOG REPORT

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Date: 02/02/10 12:18:05  
Batch File: \\Eco\server\Projects\Southface Energy Rated Homes\RESNET Conference\test.rb  
Number of Files: 49

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Building: \\Eco\server\Projects\Southface Energy Rated Homes\RESNET Conference\REM Files for 2010 Presentation  
Load: OK  
Version: Current  
Location: Atlanta, GA

No errors or warnings exist.

---

Building: \\Eco\server\Projects\Southface Energy Rated Homes\RESNET Conference\REM Files for 2010 Presentation  
Load: OK  
Version: Current  
Location: Atlanta, GA

**WARNINGS**

- You have entered 50 cfm of mechanical ventilation which is below the ASHRAE 62.2 level of 63 cfm operating continuously 24 hours per day. See the Air Leakage Report for details. \*\*\*The ventilation rate will be increased to ASHRAE 62.2 levels in compliance reports if the combined ventilation + infiltration is below the compliance program requirements.

---

Building: \\Eco\server\Projects\Southface Energy Rated Homes\RESNET Conference\REM Files for 2010 Presentation  
Load: OK  
Version: Current  
Location: Atlanta, GA

No errors or warnings exist.

---

Building: \\Eco\server\Projects\Southface Energy Rated Homes\RESNET Conference\REM Files for 2010 Presentation  
Load: OK  
Version: Current  
Location: Atlanta, GA



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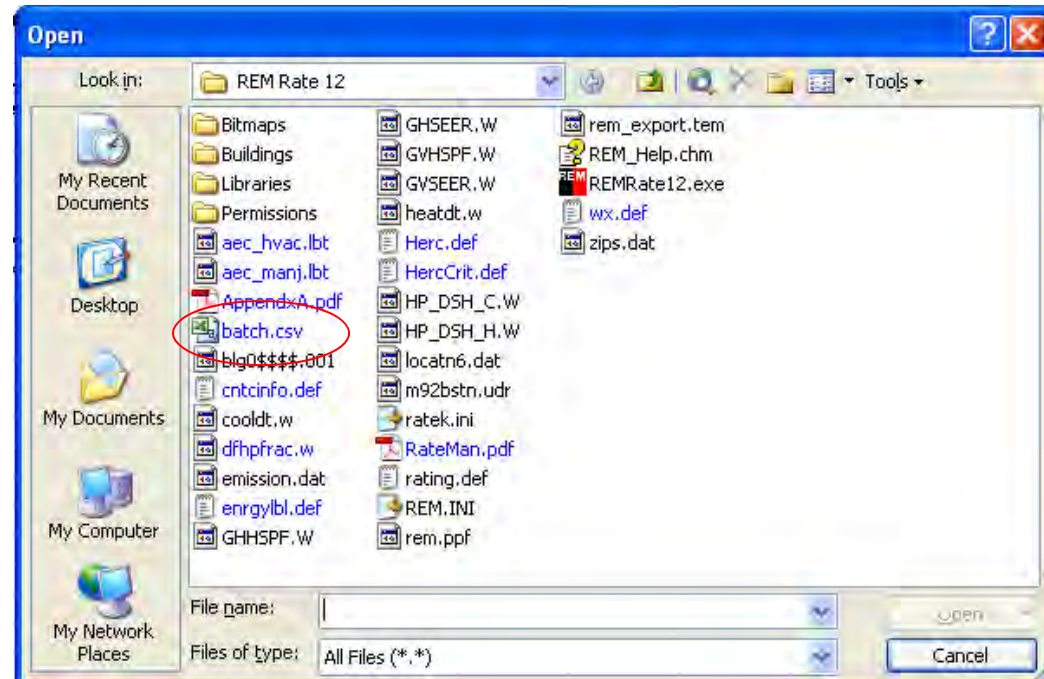
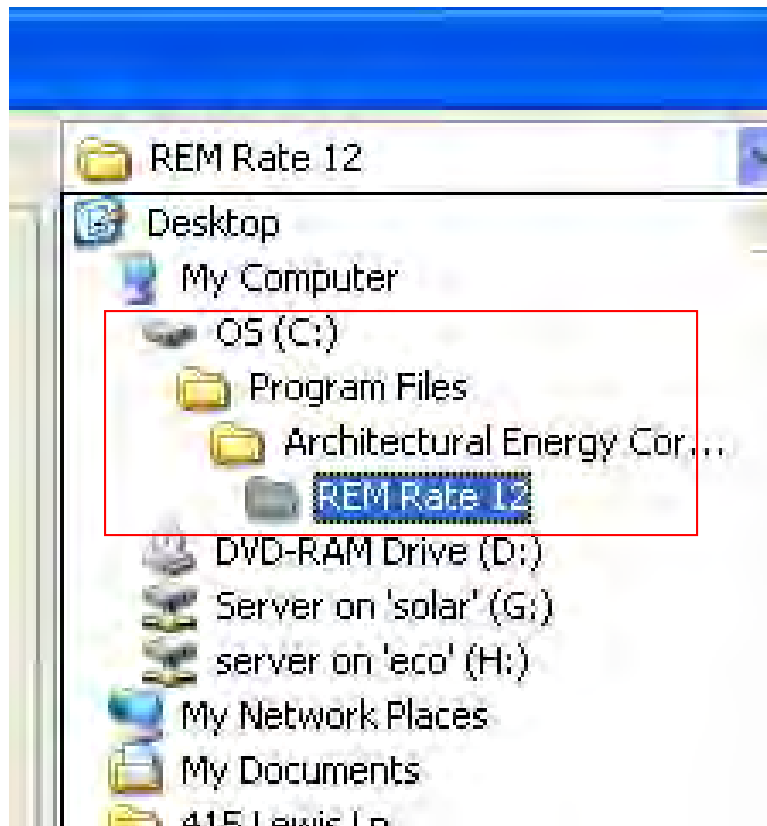
# Batch Excel File

- When run Batch reports a .CSV file saved on computer
- Can easily be saved in .XLS format and manipulated in data analysis

Microsoft Excel - batch.csv [Read-Only]

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1	REM Batch Output File														
2	Version	12.71													
3	Date	02/02/2010 12:18:05													
4	BuildingFil	HeatingLo	CoolingLo	WaterHea	Tax Credit	Energy St	HERS Ind	HeatingCc	CoolingCc	WaterHea	Lights&Ap	Photovolta	Charge	TotalCost	HeatingCc Cc
5	WEco\serv	34.9	27.2	10.4	No	Yes	76	456	162	179	619	0	300	1716	40.1
6	WEco\serv	34.5	22.3	10.4	Yes	Yes	63	434	142	179	741	0	300	1796	38.6
7	WEco\serv	33.7	17.6	10.4	No	Yes	78	418	112	179	435	0	300	1445	40.5
8	WEco\serv	43.7	22.8	12.1	No	Yes	74	501	143	209	591	0	300	1745	48.7
9	WEco\serv	35.4	19.8	12.1	No	Yes	76	482	125	209	595	0	300	1711	46
10	WEco\serv	32.6	20.7	12.1	No	Yes	76	443	129	209	595	0	300	1676	42.3
11	WEco\serv	29.1	21.7	11.4	No	Yes	84	313	145	272	458	0	300	1489	13.4
12	WEco\serv	20	17.8	11.4	No	Yes	81	221	120	272	458	0	300	1372	9.5
13	WEco\serv	19.8	17.7	11.4	No	Yes	81	219	119	272	458	0	300	1369	9.4
14	WEco\serv	20	17.8	11.4	No	Yes	81	221	120	272	458	0	300	1371	9.4
15	WEco\serv	20.2	17.9	11.4	No	Yes	81	223	120	272	458	0	300	1374	9.5
16	WEco\serv	27.2	20.5	11.4	No	Yes	81	295	138	272	458	0	300	1464	12.6
17	WEco\serv	38.5	21.7	12.1	No	Yes	75	480	137	209	613	0	300	1739	46.3
18	WEco\serv	34	22.6	10.4	No	Yes	72	545	175	251	640	0	390	2001	38
19	WEco\serv	28.7	20.9	10.4	No	Yes	77	495	159	251	569	0	390	1864	34.5
20	WEco\serv	31.9	19.8	10.4	No	Yes	81	428	126	179	486	0	300	1519	41.2
21	WEco\serv	36.2	24.1	10.4	No	No	73	453	153	179	579	0	300	1663	43.6
22	WEco\serv	32.9	22.1	12.1	Yes	Yes	66	400	140	209	696	0	300	1745	38.6
23	WEco\serv	36.8	25.6	12.1	No	Yes	68	481	162	209	821	0	300	1974	46.4
24	WEco\serv	38.4	28.1	10.4	No	Yes	71	479	177	179	730	0	300	1866	46.2
25	WEco\serv	43.7	27.7	16.1	No	Yes	78	596	175	212	721	0	360	2063	56.8
26	WEco\serv	38	21.6	12.1	No	Yes	72	439	136	209	570	0	300	1654	42.4
27	WEco\serv	35.2	21.4	12.1	No	Yes	73	437	135	209	545	0	300	1627	42.3
28	WEco\serv	28.9	20.9	10.4	No	Yes	73	335	131	179	472	0	300	1417	32.4
29	WEco\serv	35	19.7	12.1	No	Yes	72	406	132	209	510	0	300	1557	39.2
30	WEco\serv	30.1	20.4	10.4	No	Yes	73	350	128	179	472	0	300	1429	33.7
31	WEco\serv	33.5	20.6	10.4	No	Yes	74	578	159	251	657	0	390	2034	40.4
32	WEco\serv	33.6	21.4	12.1	No	Yes	74	389	136	209	545	0	300	1580	37.6
33	WEco\serv	28.3	19.8	10.4	No	Yes	76	327	125	179	453	0	300	1384	31.6
34	WEco\serv	36.9	24.8	10.4	No	Yes	75	460	157	179	583	0	300	1739	44.4
35	WEco\serv	30.8	24.2	10.4	No	Yes	76	484	169	209	613	0	300	1855	41.4

# Batch .CSV File Location



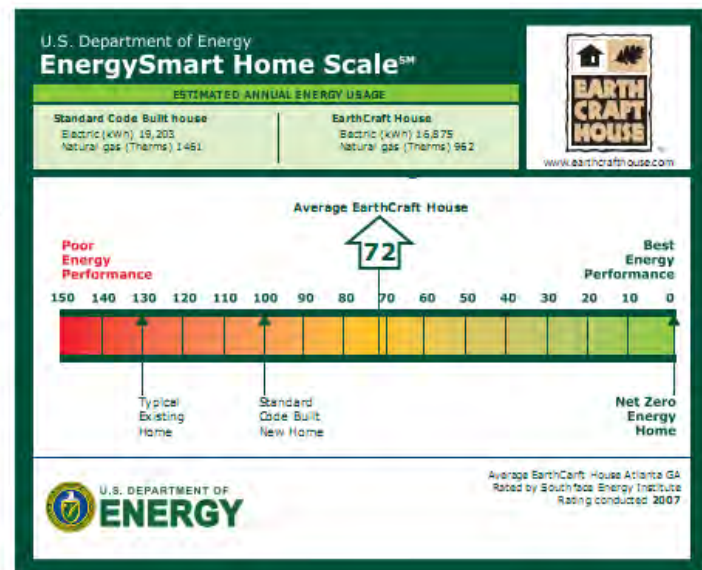
# Case Study: EarthCraft House Marketing

- Used batch.csv file to come up with average HERS index & energy use comparison
- Used this average to market the program



72

An EarthCraft House averages a 72 on the EnergySmart Home Scale which will use only 72 percent as much energy as a typical new home – at 100 on the scale – saving about 28 percent in energy use and utility bills.



# EarthCraft Study Excel Data Sheet

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1														
2		12.51												
3		06/24/2008 11:27:36												
4	HeatingLoad	CoolingLoad	WaterHeatingLoad	Tax Credit	Energy Star	HERS Index	HeatingCost	CoolingCost	WaterHeatingCost	Lights&AppCost	Photovol	Charge	TotalCost	HeatingConsum
230	57.9	25.7	13.4	No	Yes	69	642	0	184	89	0	300	1215	
231	53.9	35.2	13.5	No	Yes	66	329	179	242	897	0	300	1947	
232	51.4	40.1	16.6	Yes	Yes	70	608	272	227	954	0	300	2362	
233	53.2	36.9	14.8	Yes	Yes	66	577	252	353	963	0	300	2446	
234	26.3	17.2	11	No	Yes	76	0	0	0	89	0	300	389	
235	44.7	30.4	12.1	Yes	Yes	59	524	209	209	870	0	300	2113	
236	31.1	45.7	12.9	No	Yes	82	366	271	161	745	0	300	1843	
237	49.7	34	13.9	Yes	Yes	62	581	236	173	771	0	300	2062	
238	36.2	34.5	14.6	Yes	Yes	72	408	242	350	667	0	300	1967	
239	39.5	39.1	13.9	Yes	Yes	58	452	240	165	993	0	300	2150	
240	58.7	32.1	12.1	Yes	Yes	60	936	295	210	1343	0	390	3174	
241	54.8	42.6	13.5	No	Yes	77	575	421	387	1356	0	390	3128	
242	34.4	24.7	10.4	Yes	Yes	73	552	212	251	660	0	390	2065	
243	36.6	26.6	10.4	No	Yes	75	587	230	251	729	0	390	2187	
244	33.3	20.5	10	Yes	Yes	59	349	114	119	601	0	300	1483	
245														
246														
247														
248														
249														
250														
251														
252	<b>Confirmed ratings performed April 2007 - June 24 2008</b>							56-60		5				
253	<b>Total number of houses in range</b>						240	61-65	✓	37				
254	<b>Number of total with index &lt;= 70</b>						89	66-70	✓	47				
255	<b>Mean Average Index</b>						72.33	71-75	✓	71				
256	<b>Median average Index</b>						73	76-80	✓	56				
257	<b>Standard deviation</b>						6.15	81-85	✓	18				
258	<b>Number of houses where Tax Credit = YES</b>						96	86-90	✓	2				
259														
260														
261														

- Now let's see how it was done!

# Quick Analysis Scenario

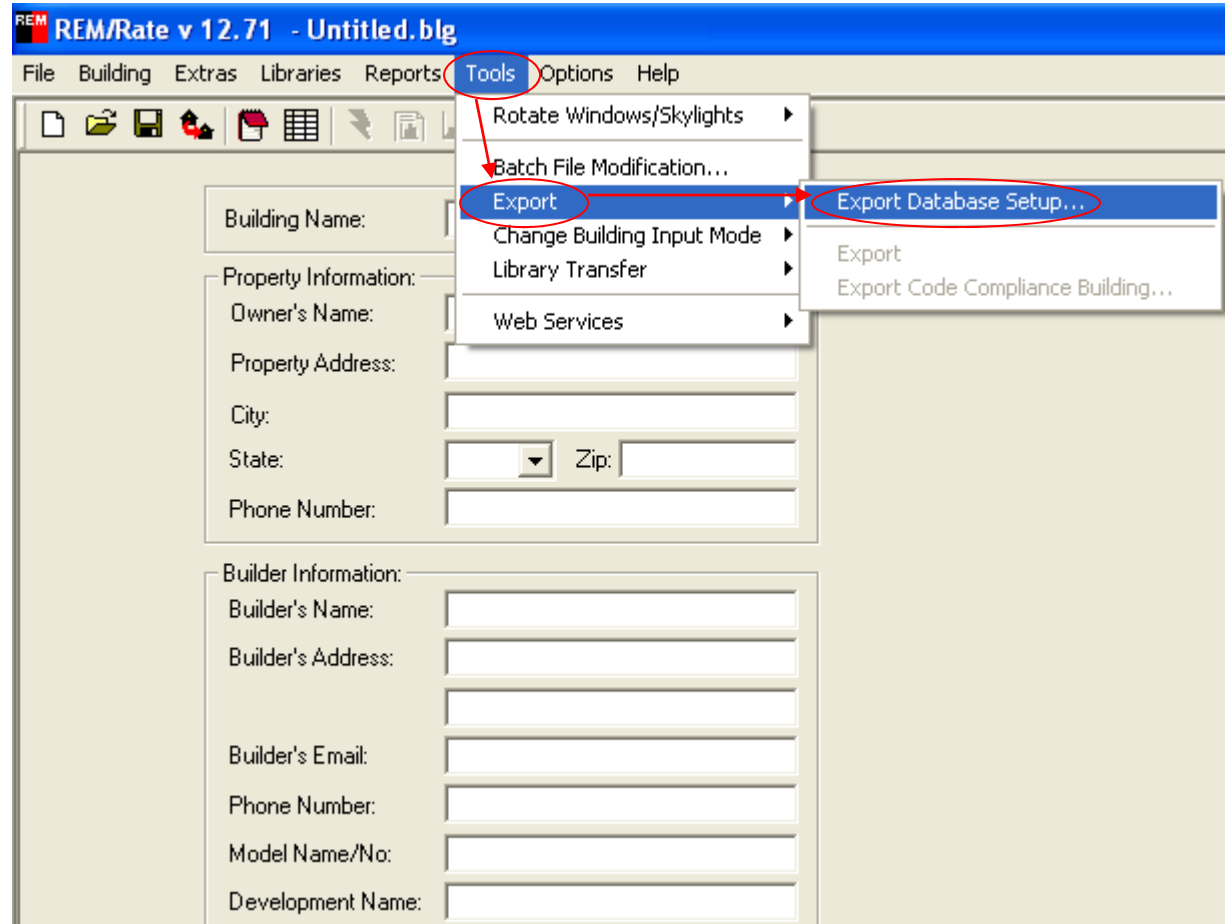
- Builder Bob wants to know how many homes qualified for ENERGY STAR
- Wants all stickers & certificates asap
- Wants excel spreadsheet to send to his boss to show which homes qualified for ENERGY STAR labeling

# Batch Database Export

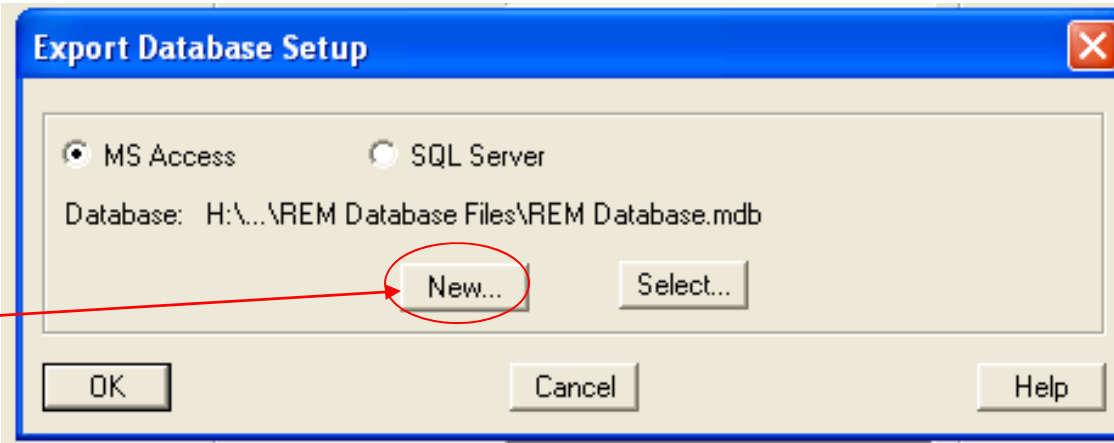
- Used to create a batch database
- More advanced than Excel Batch file
- Contains all report information
  - Emissions Report
  - Fuel Summary
- Can compare to Reference Home, Energy Code Home, etc.

# Batch Database Export

- Need MS Access or SQL Server to create database



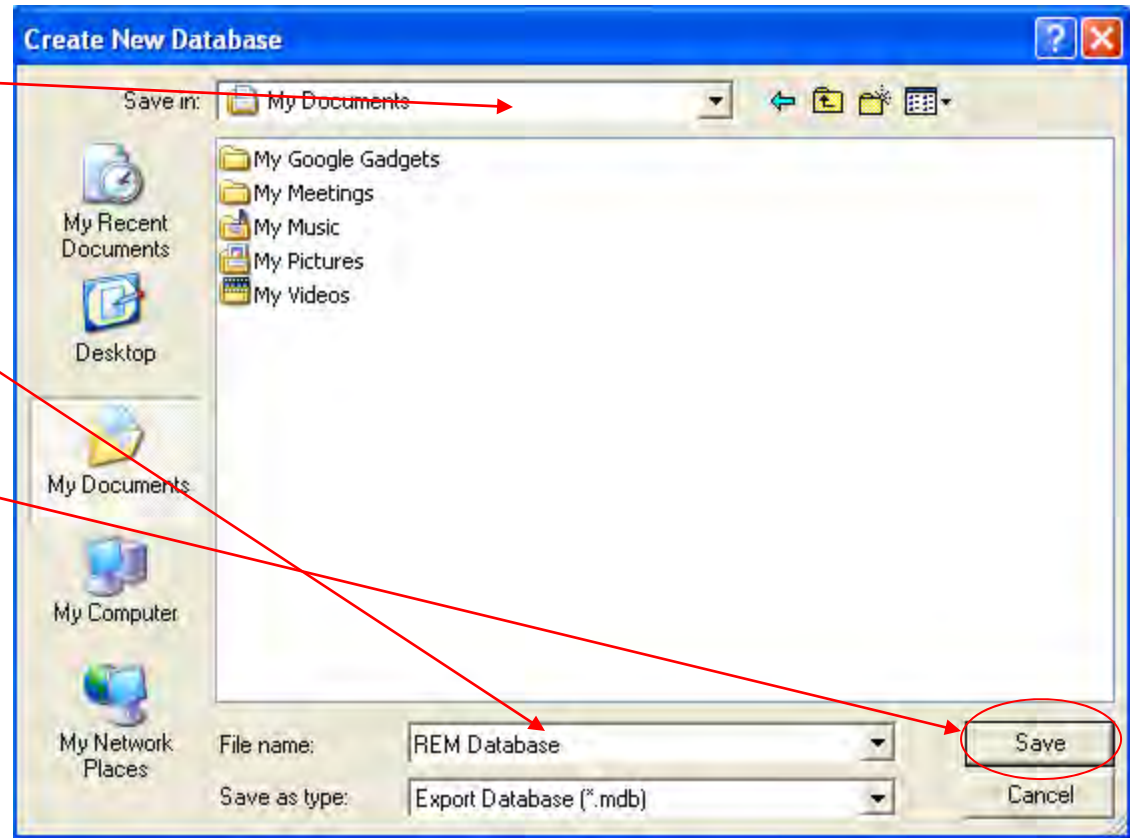
1. Select New to create new DB

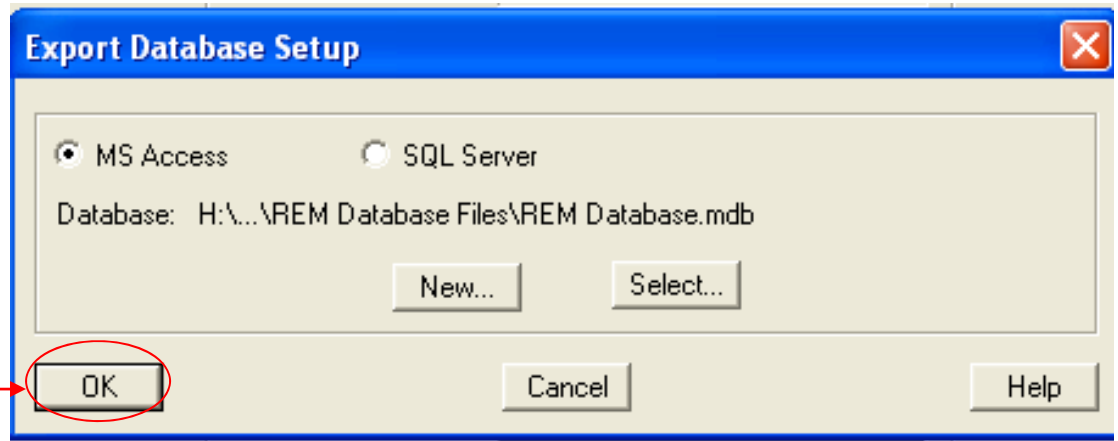


2. Choose Save location

3. Name database

4. Save database

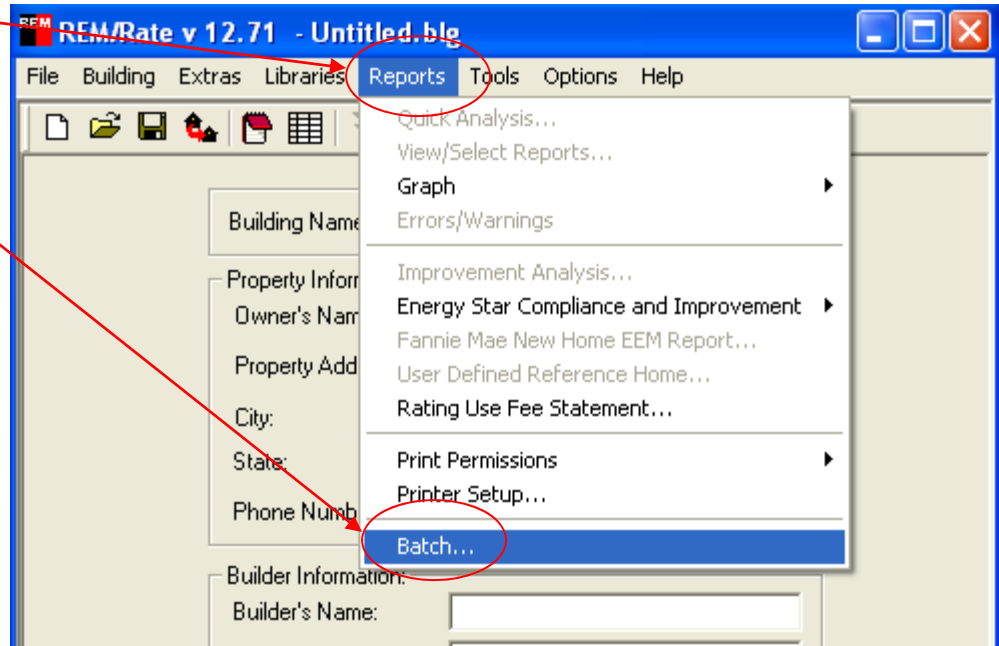




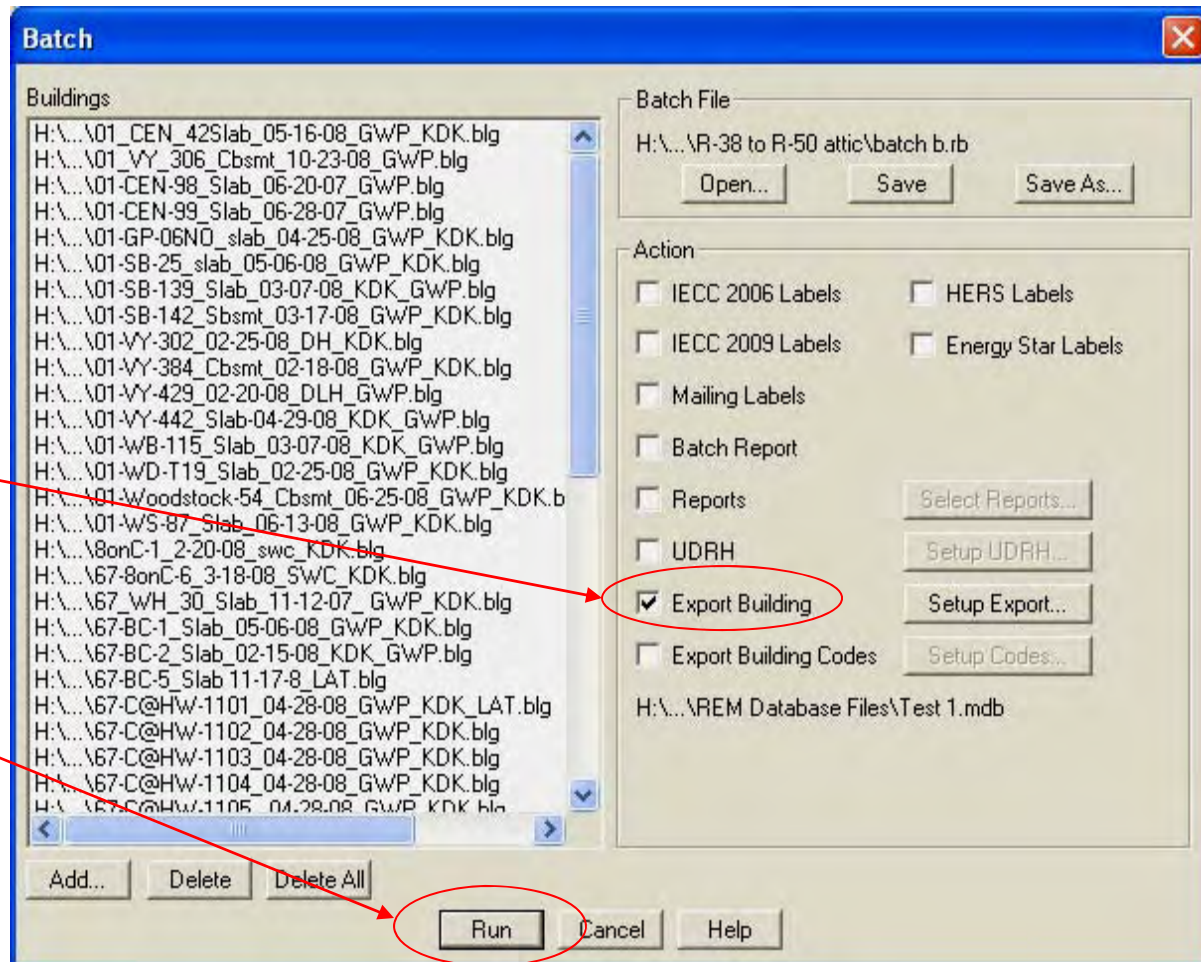
1. Select OK

2. Select Reports

3. Select Batch



1. Add files or open batch
2. Check Export Action Box
3. Select Run



REM Database Files

File Edit View Favorites Tools Help

Back Search Folders

Address REM Database Files

Name	Size	Type	Date Modified
Archives		File Folder	2/9/2010 4:44 PM
REM Database.mdb	3,972 KB	Microsoft Office Acc...	2/9/2010 4:32 PM

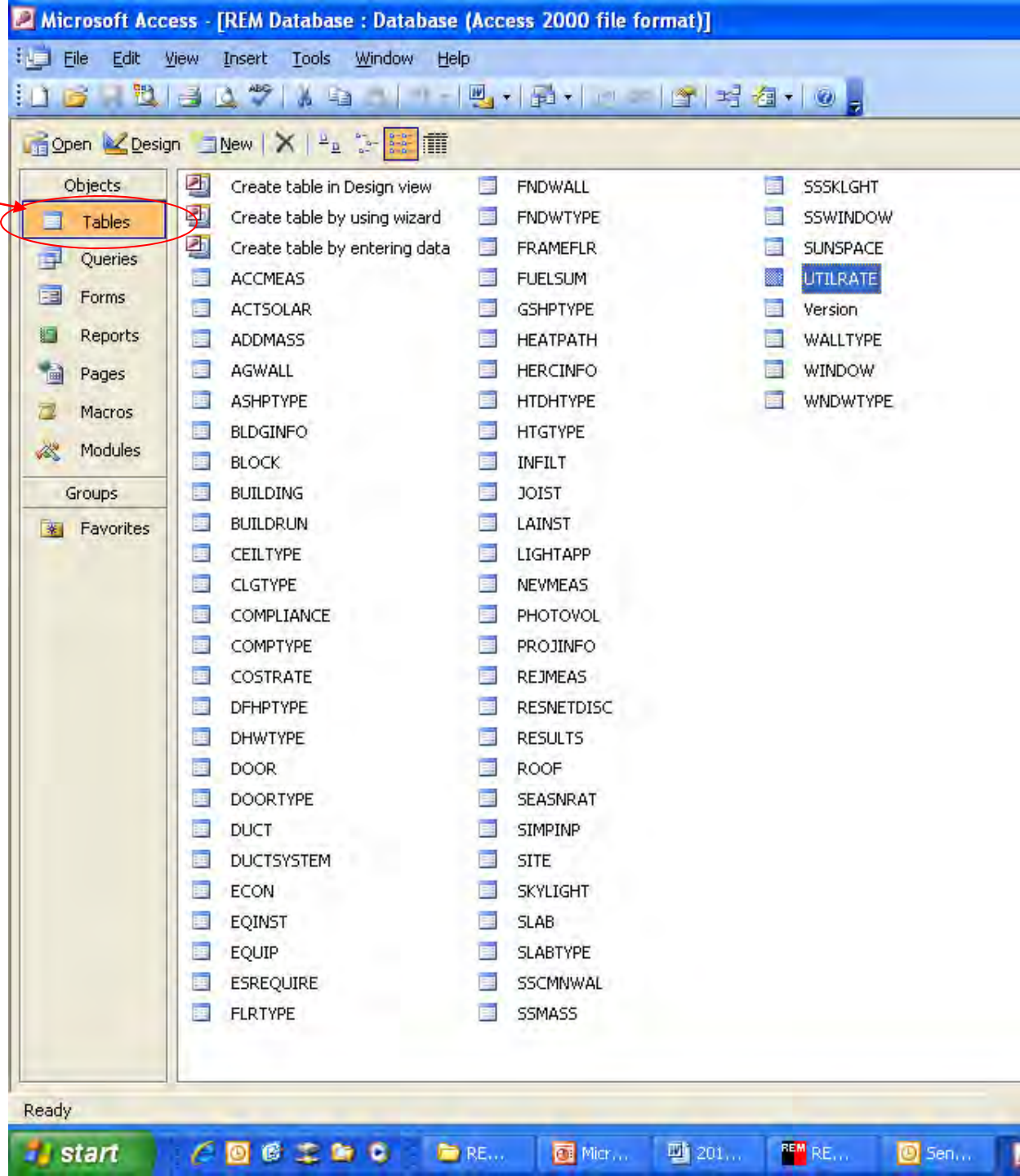
2 objects 3.87 MB Local intranet

start REM Database Files 2010 Presentation O... Inbox - Microsoft Out... Desktop 4:45 PM Tuesday 2/9/2010

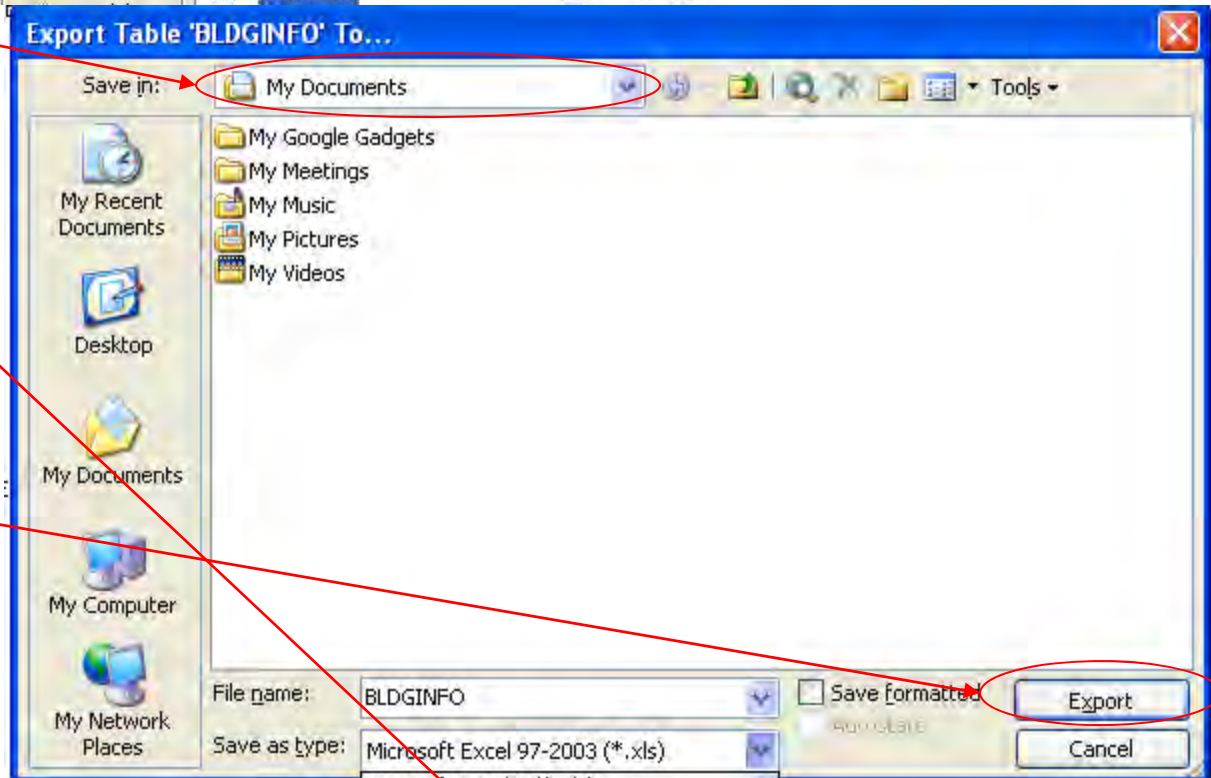
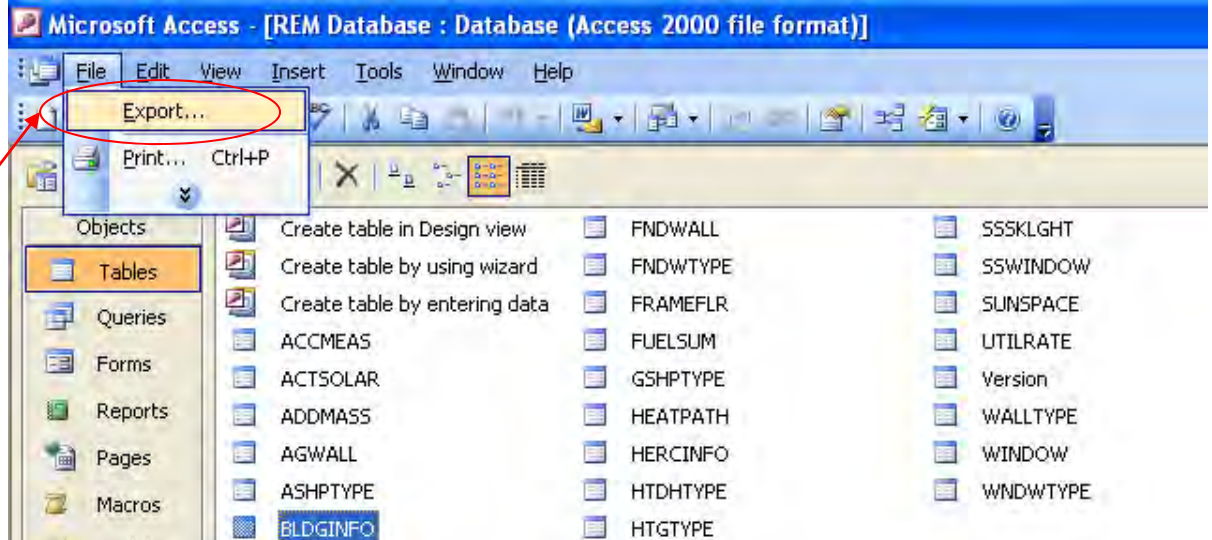
untitled - Paint REM/Rate v 12.71 - ... RESNET\_2010\_HERS...

1. Go to folder where database is saved and open database

- Tables contain all rating file report data
- Can export tables directly or create custom query

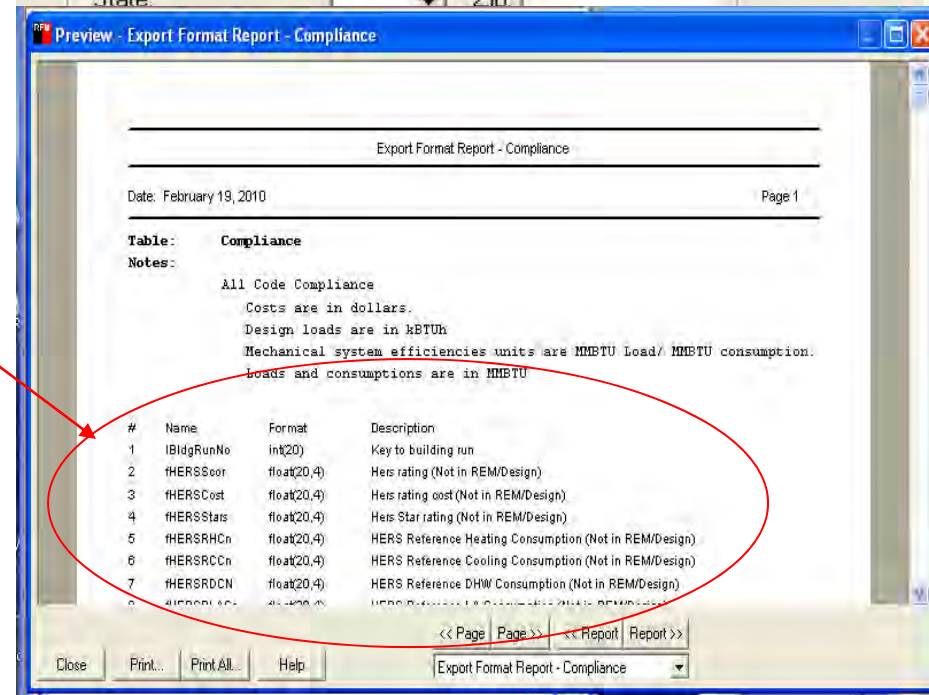
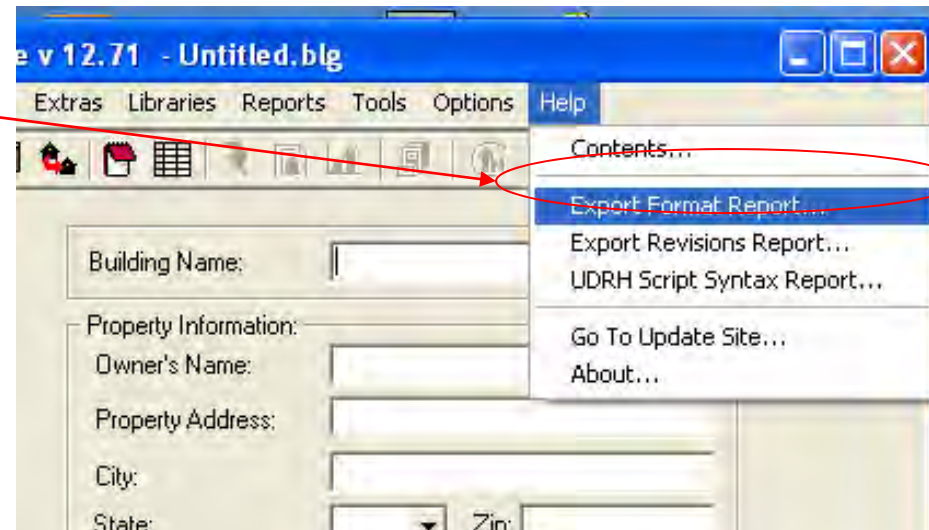


- Select the table, then select file/export
- Choose save location
- Select save as type based on your excel
- Select Export



# Database Table Code Descriptions

- Go to Help/Export Format Report to learn what all the field abbreviations mean in the database tables
- Database table code names and their descriptions are displayed in each corresponding report



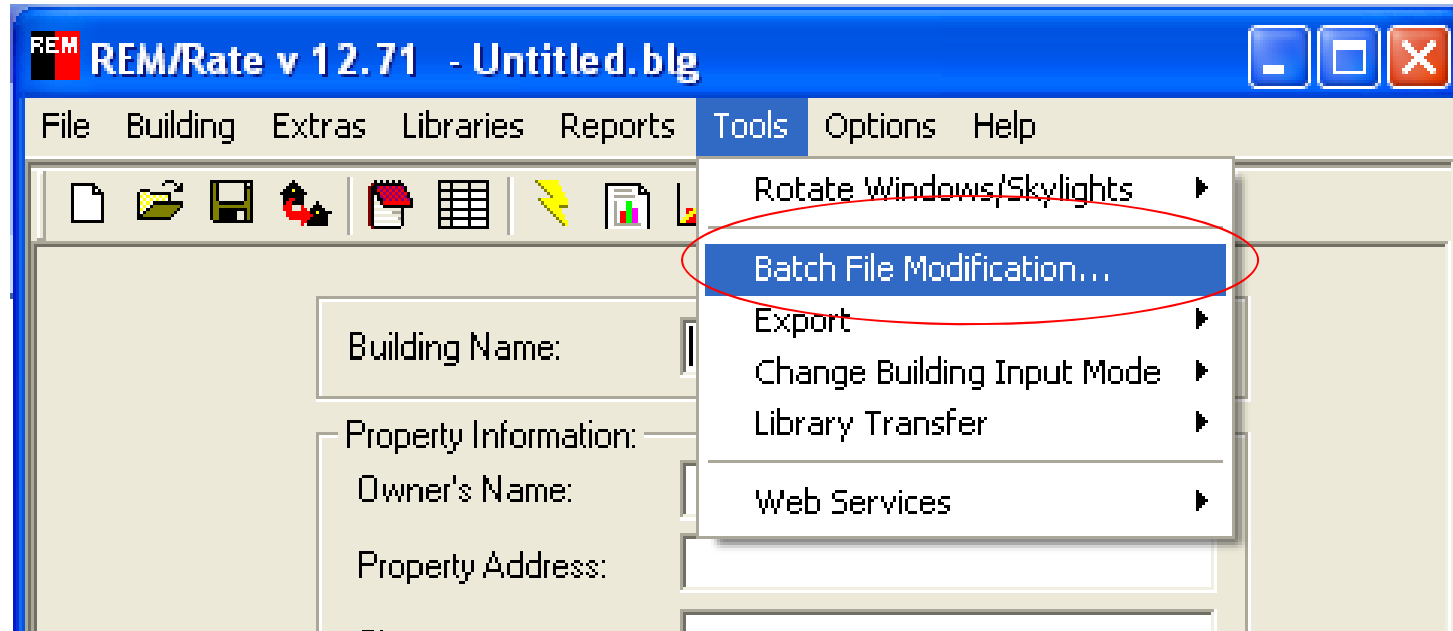
# Analyzing Batch Database

- Exported data sets can be sorted and filtered further to narrow results
- This data can then be analyzed per the Rater's requirements
  - Average HERS index
  - Average savings
  - Average energy costs

# Batch File Modification

- Used as tool to change libraries in a batch of files
- Most useful in improvement analysis for production builders
- Limited use if files have varying library types

# Batch File Modification



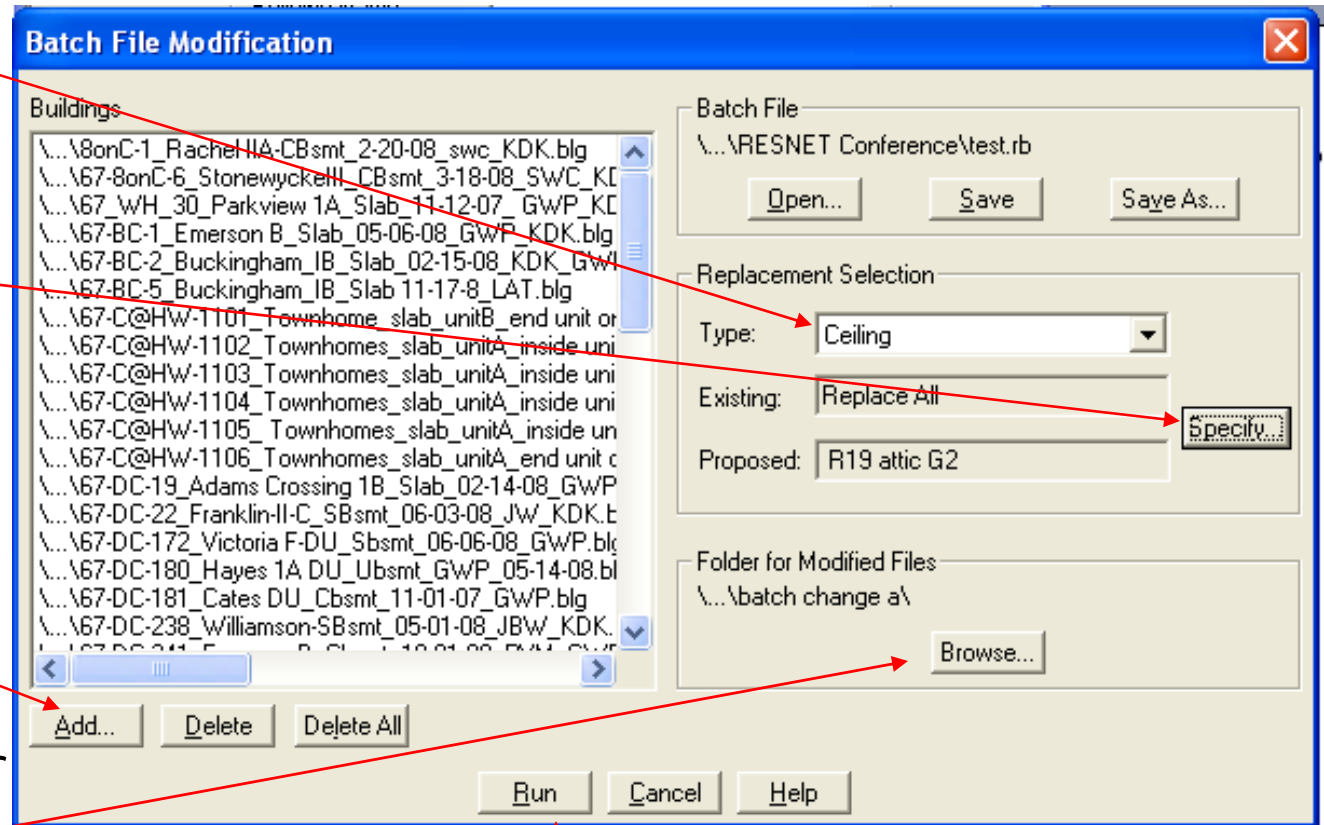
# Batch File Modification

1. Select Library Type

2. Specify conditions of modification

3. Add files to change

4. Select folder to save changes

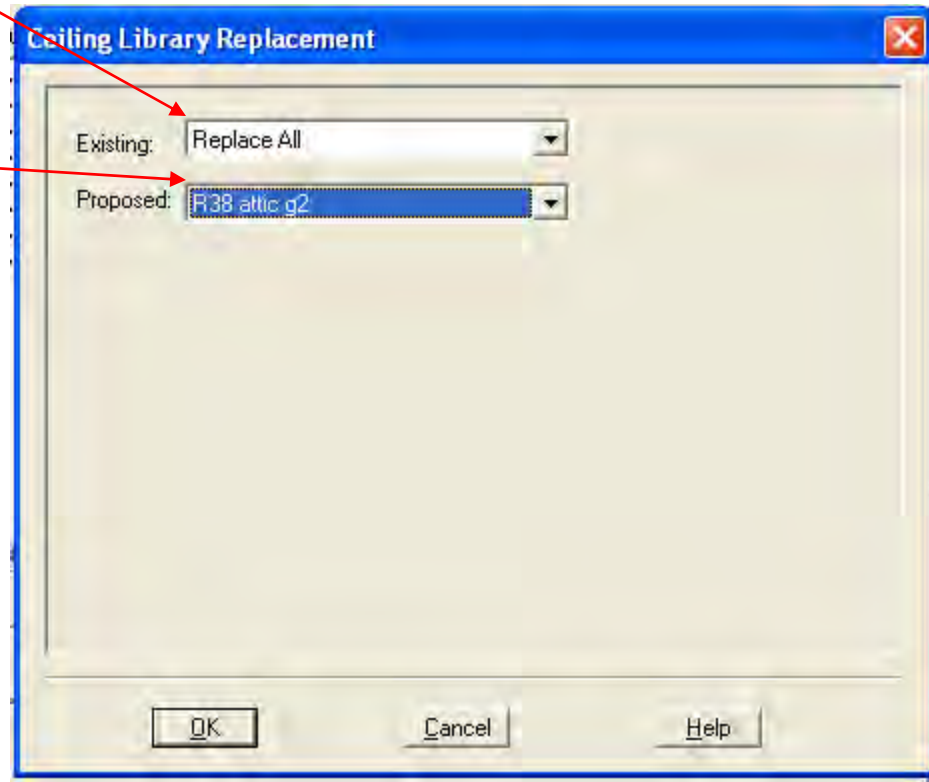


5. Run modification

# Batch File Modification

## “Replace All”

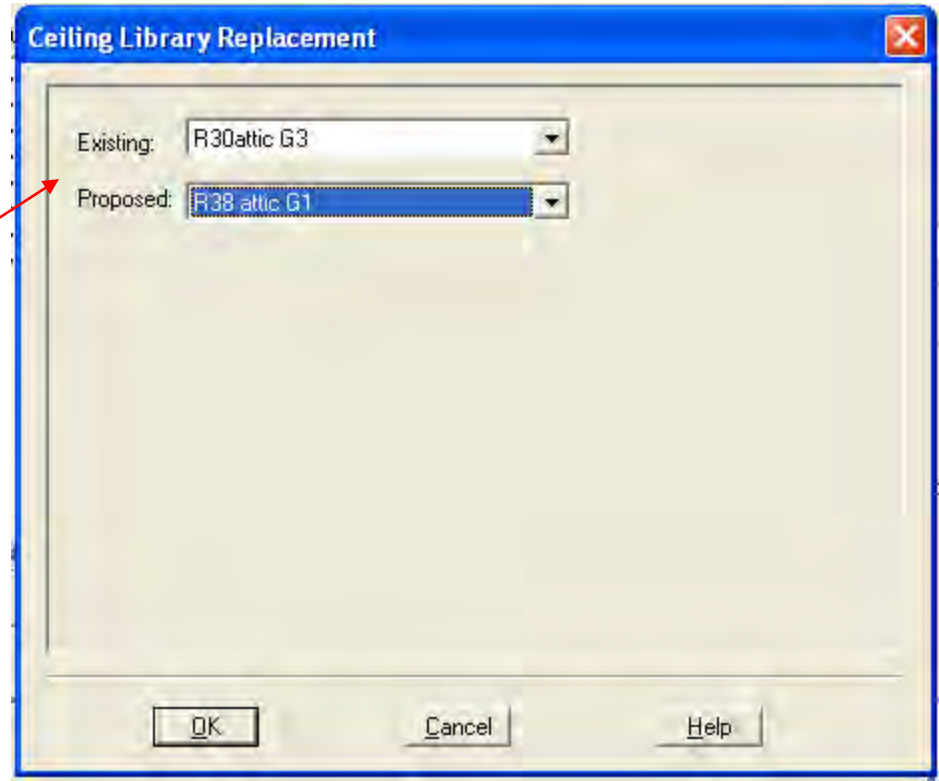
- Will replace all component inputs (ie all ceiling entries) with one library file
- Most useful when houses have same construction type across the board
- Ex.) All have one R-30 flat ceiling and replacing with R-38



# Batch File Modification

## “Switcharoo”

- Takes all entries of one library file and switches with another library file
- Most useful if consistently used same library files



# Tying it Together

## Scenario

- Builder wants to hire you to do an improvement analysis on all their ratings based on plans
- Wants know what it would take to meet Tax Credit, ENERGY STAR, and Carbon Credits
- Production homes with same construction
  1. Work on files on an individual basis
  2. Run batch improvement analysis



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# Batch Analysis Demo

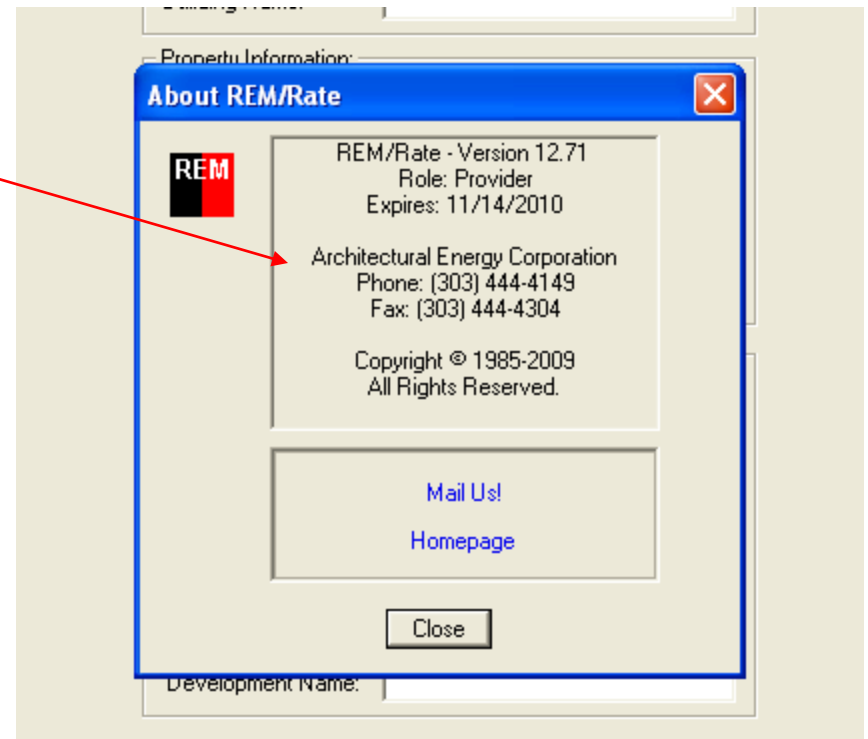
- Create Database
- Export Files to Database
- Run Query
- Export Data into Excel
- Run Batch Modification
- Run comparative improvement analysis

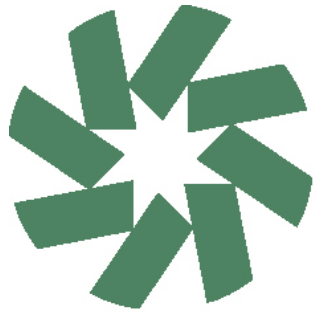
# Recommended Steps in Process

- Use the batch report to find quick result of improvement
- When threshold is reached, export original and modified file to database for deeper analysis
- Transfer both sets of data into excel to clean up data
- Send report to builder on findings

# QUESTIONS?

- Contact your Provider
- Contact AEC
  - Help/About





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Thank you for coming!

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visit us at [www.southface.org](http://www.southface.org).



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