

Residential Buildings Mandatory Disclosure Consultation Regulatory Impact Statement Response

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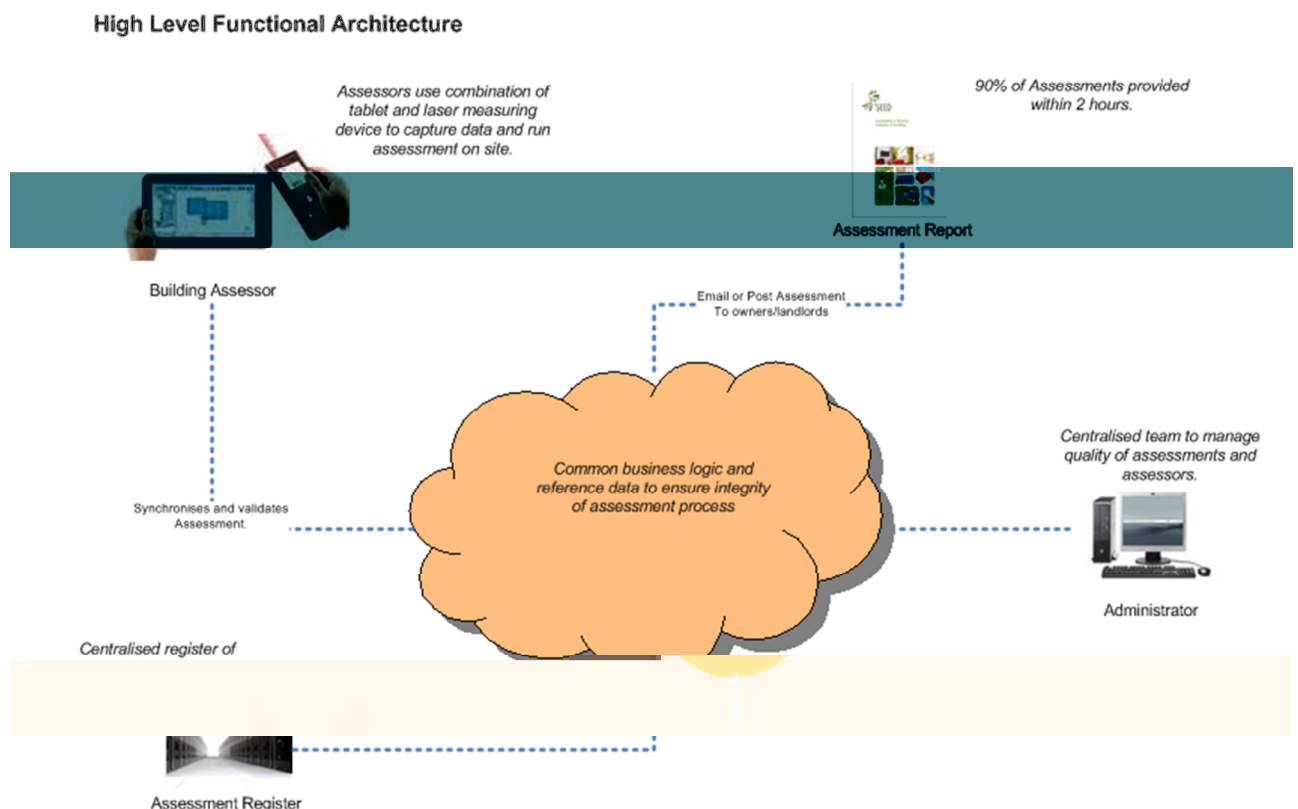
Executive summary

The highest NPV RBMD solution is an “enhanced Option 2” solution with the following attributes:

- a. simplified thermal assessment using NatHERS (with plan)
- b. NPV \$1.1 billion
- c. cost of assessment around \$200 per dwelling
- d. achieve “Option 1 outcomes for the cost of Option 2”
- e. able to integrate with white certificate scheme(s) to drive higher activity uptake rates
- f. fact-based proposal (Energy Makeovers and its partners have been doing complex NatHERS assessments of existing dwellings since 2008 and have “coal-face experience”)

Energy Makeovers and its partners are investigating the feasibility of investing significant resources to build and deliver a NatHERS-based, online residential building mandatory disclosure (RBMD) tool with links to relevant “white certificate schemes”. This joint development effort would extend the capability of NatHERS-based software and leverage Energy Makeovers’ experience performing complex NatHERS-based assessments of existing dwellings. The proposed strategic alliance would enable a NatHERS-based RBMD tool to be delivered well ahead of current industry expectations.

It is the intention of Energy Makeovers and its partners that the proposed new, easy-to-use, value-adding RBMD tool (refer high level functional architecture below) be widely available to industry for the benefit of the community on terms acceptable to government regulatory authorities.



We estimate, based on methodology and assumptions employed in the RBMD RIS, that the societal net present value of the proposed “enhanced Option 2 (with plan)” NatHERS-based RBMD solution to be around \$1.1 billion.

Additional value can be added to the proposed tool over time through continuous improvement and innovation by integrating the RBMD software with energy efficiency supplier information and “white certificate” scheme(s) databases/applications. More accurate activity recommendations (payback ranking and cost) will boost activity uptake rates leading to higher rates of energy use reduction and carbon abatement in the future.

The introduction of RBMD will meet with the usual “resistance to change” in certain sections of the community and media. It is important that community concerns be recognised early and logically countered through carefully planned government and industry communication programs.

Our analysis leads us to dismiss RIS Options 3, 4 and 5 on the basis of the demonstrated high failure rate attached to RBMD solutions that cannot successfully gain the confidence of the community and fail to instil the belief that higher RBMD ratings result in higher property values (eg. UK market).

Notwithstanding the experience that Energy Makeovers and its partners have in conducting complex NatHERS-based assessments of dwellings, we recognise that the proposed solution is yet to be built and tested. There are, therefore, significant risks attached to this proposed development project. We have identified some of the key risks in the table below with brief recommendations for mitigation:

RBMD risks	Recommended mitigation strategies
Technology	<ul style="list-style-type: none"> • Base RBMD tools on extensions of proven, credible NatHERS software (algorithms and reference database) • CSIRO to oversee technical development to ensure technical efficacy of final solution(s)
Economic	<ul style="list-style-type: none"> • Ensure adequate funding (private and/or public) for development, maintenance and ongoing governance of RBMD solution(s)
Political	<ul style="list-style-type: none"> • Through the existing COAG NFEE BIC governance structure ensure that RBMD solution is “nationally consistent” • Establish an “RBMD Industry Reference Group”, comprising key industry stakeholders, to work with BIC to ensure that the solution is nationally consistent and economically efficient for business and community • Consider appointing CSIRO as the Chair of the proposed RBMD Industry Reference Group
Social	<ul style="list-style-type: none"> • BIC to research community attitudes to RBMD • Develop programs to educate and inform the property industry and the community about RBMD as appropriate • Establish a National Register for RBMD ratings and engage the Australian Bureau of Statistics to investigate the link between ratings and property value (building on the earlier ACT study)

In view of the risks identified above, Energy Makeovers and its partners would appreciate the support, encouragement and guidance of the National Framework for Energy Efficiency (NFE) Building Implementation Committee (BIC) to ensure that its proposed significant investment in mandatory disclosure is protected so that in due course it will benefit not only the project sponsors but the community, industry and government.

RBMD will overcome market failure to provide information to drive investment in energy efficiency and carbon abatement

Energy Makeovers agree with the proposition put forward in the RIS that “the market for residential buildings suffers from information problems”. Specifically, there is a “market failure” in the housing market leading to “information asymmetry (unevenness)” with the following undesirable outcomes being observed today:

- Difficult to distinguish between high and low quality buildings (in relation to energy, water and greenhouse performance) at the time of purchase/lease
- Adverse selection (the market for lemons)
- High quality products driven out of the market

This means the property value judgements by buyers and renters are compromised to the extent that information concerning energy, water and greenhouse performance is not available. As a result buyers or agents cannot readily tell how efficient the performance of a house is and are, therefore, not able to make informed purchase decisions.

Energy Makeovers agrees that RBMD, properly designed and implemented, will:

- Improve community wellbeing and environmental sustainability and reduce potential greenhouse emissions
- Counter information shortfalls (asymmetries) and significantly reduce the incidences of adverse selection by requiring all sellers and landlords to disclose a mandatory rating that will inform buyers of the energy and carbon efficiency of buildings at the time of sale/lease
- Promote efficient investment to make dwellings more sustainable
 - Although RBMD itself does not mandate that energy efficiency or carbon abatement improvement projects/activities be carried out by owners/landlords, so long as RBMD ratings are perceived to be “credible” and to directly impact property values, RBMD can be seen as the future primary means of driving investment in energy efficiency and carbon abatement in residential buildings
 - Most existing housing stock will receive poor ratings but will have financially attractive energy efficiency / carbon abatement options available to them (see evidence below)

A random sample of Energy Makeovers' raw field data collected between 2009/2010, indicates that there is significant under-investment in energy and carbon efficiency in the housing market (refer Appendix A – Residential Investment Analysis_EMHouses). The raw data shown in Appendix A is summarised in the table below:

Sample of 20 consecutive <i>Energy Makeovers Roadmaps</i> (2009/2010) with investment opportunities found						
Activity	Number of dwellings investment applicable	% of sample	Payback (< 2yrs)	Payback (< 5yrs)	Total investment	Average investment / dwelling
Weather sealing	12	60%	2	10	\$14,249	\$1,187
Lighting	16	80%	8	8	\$4,436	\$277
Heating	1	5%	1		\$715	\$715
Hot water	1	5%		1	\$1,350	\$1,350
Ceiling insulation (including weather sealing)	1	5%	1		\$1,110	\$1,110
Solar PV	1	5%		1	\$8,571	\$8,571
Total number of improvement projects	32				\$30,431	\$1,522 ⁽¹⁾⁽²⁾

Notes:

- (1) Average recommended energy efficiency investment per dwelling (excluding Solar PV) with payback less than 5 years is \$1,078
- (2) The RIS average cost of energy efficiency investments across all jurisdictions over the ten-year period is shown to be between \$372 and \$413, which appears low when compared to Energy Makeovers' figure of \$1,078

RBMD will drive investment if the community perceive that higher ratings yield higher property values

The “benefits case” for RBMD (in the RIS) is the uptake of energy efficiency investments. The uptake of energy efficiency investments by an owner (or landlord) will be directly proportional to how strongly they believe the rating will impact their property’s value in the market place.

Therefore, the primary criteria to be met in designing the RBMD policy and its implementation pathway (to maximise investment uptake) should be the credibility of the rating tool(s) and the professional standing of the assessors using the tool(s). Failure to ensure scheme credibility will risk a community backlash similar to that experienced by the Federal governments’ now defunct Home Insulation and the Green Loans programs.

RBMD will deliver genuine significant net societal benefit if:

1. Credible tool(s) and assessors are employed that result in the community accepting the link between the RBMD rating and property value
2. Governments facilitate delivery of the benefits case for RBMD by working together through COAG, or work independently and /or informally together, to implement a national white certificate scheme (or state/territory-based schemes) to create/expand “energy retailer compliance demand” for energy efficiency activities, thereby financially subsidising the cost of activities to boost uptake levels, for example the existing:
 - a. Victorian Energy Efficiency Target (VEET) scheme, or
 - b. NSW Energy Efficiency Scheme (EES)
3. Owners are encouraged through government and industry promotion to improve the value of their properties through uptake of viable energy efficiency / carbon abatement projects (usually with paybacks of less than 5 years)
4. A central national database of RBMD ratings is established that can be used to provide actual market data to demonstrate the link between RBMD ratings and property value - such a database can also be used to provide fact-based information to inform future policy development and implementation decisions.

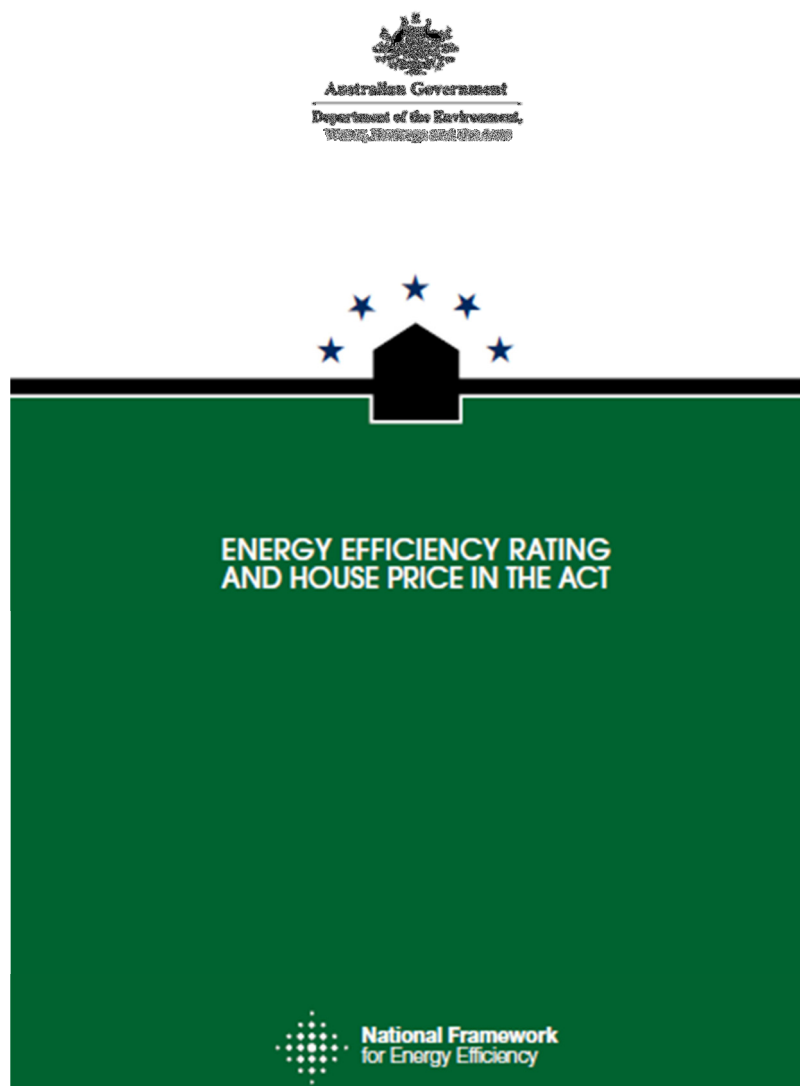
Warnings from the UK residential mandatory disclosure experience

The UK experience shows that where RBMD is not respected by the community and is perceived as “just more red tape”, there is no apparent link between property value and the level of the rating. Today, in the UK residential mandatory disclosure assessments cost around GBP30 (A\$50) and there is a large surplus of assessors competing for business in the market. Clearly this fee is not sufficient to support properly trained professional assessors using a credible and an accurate mandatory disclosure rating tool (refer *Appendix B – Energy Makeovers Rating Framework Submission May 2010* for further details)

Ireland’s residential mandatory disclosure scheme - a success story?

200,000 residential ratings have now been completed and the “concept has taken strong root”. Definitive data on property price impacts is not yet readily available, however, work has commenced looking into the market and community attitudes.

There is already strong evidence from the Australian Capital Territory, where RBMD has existed since 1998, that higher ratings correlate strongly with higher property values.



Positive link identified between home energy rating and sale price

Source: Department of Environment, Water, Heritage and the Arts website (18th December 2008)

<http://www.nathers.gov.au/about/publications/pubs/eer-house-price-act.pdf>

Research released by the Federal and ACT governments shows home energy efficiency pays off. The report, commissioned by the Department of Environment, Water, Heritage and the Arts, shows a positive link between a house's energy efficiency star rating and its sale price.

It found that improving the energy performance of a house by one star level will increase its market value on average by around 3 per cent.

The ACT was the first state or territory to introduce mandatory energy ratings in 1998.

An alternative, “bottom-up-approach” to estimating the improvement in property values from modelling of the reduction in energy bills is available from the Brutal Art website (see below):

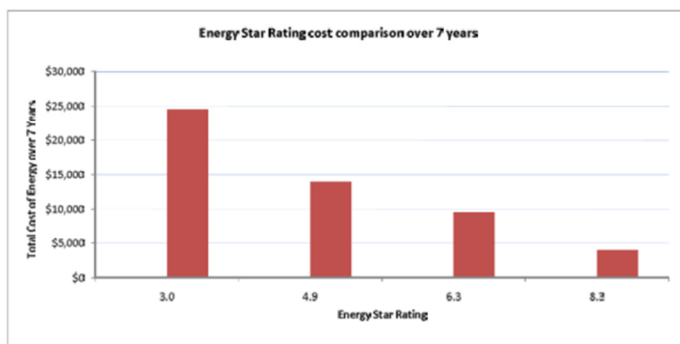
Energy efficient house design: how much is each energy star worth?

3 Star three bedroom home with double garage.



Energy Cost Calculator

Using the FirstRate energy rating assessment tool, we can ascertain the Total Energy Usage per year of the different Star Rated versions of the home. Once we have the annual energy costs, we can factor in the effects of inflation to understand how much each Star rated house will cost in energy consumption over a period of 7 years.



Conclusion: “How much is each energy star really worth?” When compared to a typical existing 3 Star suburban home, each additional star represents around a \$5000 saving in energy costs over 7 years of home ownership.

<http://brutalart.com.au/architecture-design/energy-efficient-house/>

Even before the introduction of a national RBMD scheme, strong anecdotal evidence exists that the community connects higher energy ratings with higher property value. Although portraying RBMD in a negative light, the article below demonstrates that a link between rating and value already exists, at least in the media. The article implies: 1) that investment to improve the RBMD rating of “McMansions” would protect property value, and 2) without RBMD no value would be lost because buyers would not be aware of “lemons” (and adverse selection would continue).



NEW SQUEEZE: Oversized houses with few environmental credentials will be penalised under the plan. *Source:* The Daily Telegraph

Federal Government green scheme to hit price of 'McMansions'

Ben Pike, Kirsten Craze

From: [The Courier-Mail](#)

August 13, 2011

A NEW green scheme threatens to wipe tens of thousands of dollars from the market price of so-called "McMansions". The Federal Government aims to introduce, by as soon as next year, mandatory energy star ratings for homes being sold or rented out.

Under the favoured system, vendors and landlords would have to pay about \$200 to have their property assessed, with a total cost to homeowners and property investors of \$1.1 billion over the next 10 years.

Housing experts said most McMansions would score very poorly on the ratings system, which would be similar to the methodology used to identify the energy efficiency of whitegoods. Mick Fabar, director of private energy-ratings firm Green Homes Australia, said: "Through our experience with our rating tool, those two-storey McMansions would not get over zero."

There are significant financial implications for owners of these homes - and most older dwellings which are also likely to rate lowly.

Owners would need to either spend up on going green or face the prospect of a lower sale price.

A Federal Government study into a similar ACT scheme operating since 1999, which rates properties out of 10 stars, found that a 1-star difference affected selling prices by 3 per cent.

Asked whether the scheme would have a negative effect on the sale price of some homes, a spokeswoman for Climate Change and Energy Efficiency Minister Greg Combet said: "It will allow buyers and renters to better compare different properties, making it easier to identify a property which uses less energy or water and thereby save money."

But the Federal Opposition's spokesman for climate action, environment and heritage, Greg Hunt, said such a scheme would create "enormous uncertainty".

"It could push up the cost of rent for people just when they are feeling cost-of-living pressures," Mr Hunt said.

"It's another cost imposed on people from the Government."

The new federal system is expected to replace the Bligh Government's so-called Sustainability Declaration which was introduced in 2009.

Under the scheme, sellers were meant to sign a form detailing their home's energy-efficient features.

But the property industry complained the forms were too complex and buyers were not interested in the information.

Pacing the objections

Current negative community attitudes towards RBMD are exemplified by a recent article in the Eureka Report, entitled “Ten-star waste”, dated August 24th 2011 (refer Appendix C). This article reveals common misperceptions to be overcome and addressed through careful design and implementation of RBMD. A review of each of the objections contained in this article is prudent to determine the implications for RBMD policy design and implementation (see table below).

Objections (need addressing)	Implications for RBMD:	
	Policy	Implementation
1. Don't need ratings to know what to do: “Star ratings are potentially a costly waste, when the efficiencies they point to are obvious anyway. Blind Freddy could tell you that a Mansion is an energy guzzler or that an unrenovated Victorian cottage will have high energy bills”.	Demonstrate that 2 houses that appear to be similar can have very different ratings (e.g. due to orientation or the presence of efficient appliances)	Run an advertising campaign to launch RBMD that emphasises the value of a credible RBMD rating to understand the drivers behind desirable ratings that help buyers to assess overall property values
2. Scepticism concerning the ACT study: suggesting a 3% value impact per star increase. The suggestion is that the value premium will erode as people determine how to make the improvements themselves (post purchase/lease).	<ul style="list-style-type: none"> ○ Update the 2008 ABS study to include 2009 and 2010 data ○ Look for evidence in other parts of the world where RBMD already exists 	Promote the evidence found during policy development over the next 6-12 months
3. Net benefit not sufficient: \$1 billion net benefit “isn't really a great return” – implication it is not enough QUESTION: HAS AVOIDED/DEFERRED GENERATION / T&D INVESTMENT BEEN COMPREHENDED? (REDUCE PRICE TO CONSUMER)	<ul style="list-style-type: none"> ○ This objection is spurious ○ \$1 billion is an attractive societal return 	<ul style="list-style-type: none"> ○ Promote the economic benefits when launching the scheme to the community ○ For the assumed 30% of households that invest the net benefit is \$420 (NPV)
4. Community will not pay attention to rating: “How much notice will buyers take of the scheme? There is a great danger that people will pay little attention to the scheme, given all the other factors – such as proximity to good schools, healthcare, parks and shopping - that are the key considerations when buying a property, at least for most of us”.	Climate change will gain an increasing community “mind share” as the science shows that dangerous climate change is imminent and the emphasis shifts from mitigation to adaption	Promote the need for individuals to play their part in increasing energy efficiency and reducing carbon pollution

<p>5. Taking action will destroy value: “In some instance ratings may have a perverse impact, whereby rushed efforts by owners to achieve a high number of stars see them apply changes that are inappropriate for the architectural style of the property, resulting in a fall in value, disillusionment in the scheme, and costly works to undo the “quickie” energy rating fix by the vendor”.</p>	<p>Ensure that RBMD assessors are licenced, audited and well qualified to ensure that energy efficiency and carbon abatement project uptake advice is value-adding for the seller</p>	<p>Promote and support a vibrant national white certificate industry with proper “checks and balances”</p>
<p>6. Risk of fraud: “I’m concerned with the risks of fraud. It is likely that the scheme will create legions of assessors, that the training consistency and accreditation process for these inspectors will be shoddy and, worse, there will be price fixing and rorting of the scheme. There is a conflict of interest when the vendor pays for the assessor’s services, but it is the buyer who relies on the advice.”</p>	<p>Use of a credible tool(s) and assessors will lead to the community accepting the link between property value and the mandatory disclosure rating</p>	<ul style="list-style-type: none"> ○ Allow sufficient time for RBMD assessors to be trained and made ready with adequate coverage and response capability to meet the demands of sellers and agents ○ Ensure effective assessor accreditation bodies are in place
<p>7. Another tax!: “I’m deeply frustrated by the imposition of another time-consuming and costly impost on property owners.... a mandatory scheme smacks of revenue-raising, and is an expensive bureaucratic direct action initiative that amounts to covert government interference in private transactions – yet another compulsory tax.”</p>	<ul style="list-style-type: none"> ○ RBMD is a response to market failure, therefore, regulatory intervention is appropriate in this case ○ RBMD is not a tax 	<p>Emphasise the net benefits of RBMD and the fact that the cost of RBMD is not a tax. RBMD provides valuable information to buyers so that adverse selection can be avoided</p>

The success of RBMD will depend almost entirely on the adoption of a credible tool(s) and proper accreditation of professional RBMD assessors

Credibility criteria for RBMD tool(s)

To be credible to members of the community any RBMD tool must deliver a rating that is:

1. cost effective (when compared with the benefits that flow)
2. an accurate measure of the target variables which comprise the rating calculation
3. comparable and consistent with past BCA ratings for new dwellings, to enable as-built BCA ratings to be compared/reconciled with subsequent RBMD ratings
4. able to credibly identify and rank energy efficiency / carbon abatement activities that are specific to the dwelling being assessed
5. capable of planned future development to better measure actual net energy consumption and carbon emissions attributable to the dwellings being rated

Credibility criteria for RBMD assessors

To be credible and respected by the community RBMD assessors must be:

1. accredited/licenced by a Registered Training Organisation (RTO) to minimum Diploma level
2. subject to regular audit processes administered by a suitably instituted national accreditation authority (eg. ABSA, Australian Property Institute, Royal Institute of Chartered Surveyors, Building Design Association)
3. required to complete regular Continuing Professional Development (CPD) activities to maintain current accredited status
4. available in sufficient numbers (estimated requirement approximately 2,000 FTEs⁽¹⁾) and with adequate geographic coverage to enable RBMD ratings to be provided within 48 hours to owners and real estate agents

Note:

- (1) *Based on time to complete enhanced Option 2 (in RIS) assessment/report - refer page 24*

Analysis of RIS options against “credibility drivers” indicate Option1 (full thermal assessment) would trigger most new investment

Analysis of RBMD tool(s) credibility drivers

Drivers of community acceptance and credibility	Option 1 (full thermal assessment)	Option 2 (simplified thermal assessment)	Option 3 (self-assessment online tool)	Option 4 (self-assessment check list)	Option 5 (non-regulatory)
Cost effective (compared with benefits)	Yes (due to greater uptake)	Yes	Yes	Yes	Possible
Accurate measure of target variables	Yes	Possible	No	No	No
Comparable with BCA ratings for new dwellings	Yes	Possible	No	No	No
Able to accurately identify specific energy efficiency / carbon abatement activities costs and benefits	Yes, link to “white certificate scheme” databases	Possible	No	No	No
Scope for continuous improvement/innovation	Yes	Possible	No	No	No

Analysis of assessor credibility drivers

Drivers of community acceptance and credibility	Option 1 (full thermal assessment)	Option 2 (simplified thermal assessment)	Option 3 (self-assessment online tool)	Option 4 (self-assessment check list)	Option 5 (non-regulatory)
RTO accreditation	Yes	Yes	Not required	Not required	Not required
Subject to audit	Yes	Possible	Not required	Not required	Not required
CPD required	Yes	Possible	Not required	Not required	Not required
Coverage / availability	Yes	Possible	Not required	Not required	Not required

NatHERS-based assessment tools for existing dwellings are already in use

It is worth noting that Energy Makeovers has been performing NatHERS-based residential building assessments since June 2008 and has completed over 100 comprehensive energy/water/greenhouse assessments for private households, governments and businesses (refer Appendix D – Example of “*Energy Makeovers Roadmap*” Completed for CSIRO’s Net Zero Emissions Retrofit House).

Energy Makeovers Roadmap assessments include extensive full NatHERS thermal modelling of the building shell thermal performance, using proven plan creation technology (taken from the property valuation industry).

For the past 2 years, Energy Makeovers has been promoting the concept of using a NatHERS-based RBMD solution to governments and industry – for details refer to:

- Appendix E1 – Vic Gov Letter NatHERS for RBMD Jan 2010
- Appendix E2 – EnergyStart
- Appendix F – Prime Minister’s Energy Efficiency Task Force Group Energy Efficiency submission May 2010

Today Energy Makeovers could deliver an Option1 (full thermal assessment) NatHERS-based RBMD assessment for around \$400

With a history of using NatHERS tools to model existing dwellings, Energy Makeovers can report that NatHERS tools can be used to successfully rate existing dwellings and, therefore, can be used as the basis for a RBMD tool. The table below details the time taken to collect the data (on-site) needed for a full NatHERS rating:

Site Measure & Data Collection Times											
	Site details	Appliance Audit	Site measure/plans	Shower flow test	Lighting	Ductwork	Insulation	Window Coverings	Checklist	FirstRate 5	Total time taker
1	4	50	50	3	14	5	30	8	5		
2	5	32	55	5	10	5	20	10	10		
3	5	30	63	2	9	15	20	8	5		
4	5	25	35	15	10	15	15	5	5		
5	10	45	60	5	15	15	15	10	20		
6	10	50	73	3	12	10	15	20	12		
7	5	30	35	2	5	5	15	5	20		
8	10	40	60	5	5	10	10	10	10		
9	10	40	35	5	15	15	15	10	15		
10	10	25	40	5	5	10	10	10	15		
11	5	35	50	5	10	5	20	15	5		
12	5	30	30	5	5	10	10	10	5		
13	10	45	50	5	10	0	10	10	10		
14	10	30	33	5	5	0	15	2	5		
15	5	25	30	2	5	5	10	5	8		
16	5	40	40	5	5	0	0	5	10		
17	15	50	68	2	15	0	0	5	10		
18	5	35	45	2	10	10	10	5	5		
19	5	40	40	2	10	0	13	10	15		
20	5	35	20	5	10	15	15	5	25		
21	10	48	60	3	10	10	10	10	5		
22	10	60	30	5	10	0	5	5	10		
23	20	35	50	5	15	5	15	25	10		
24	5	18	55	2	10	0	15	5	45		
25	10	55	37	3	5	0	0	5	5		
26	20	30	30	5	5	0	5	5	10		
27	5	36	55	5	10	0	10	10	5		
28	15	28	20	2	5	0	15	5	5		
29	5	28	72	2	6	0	19	5	5		
30	10	37	87	5	26	0	16	4	10		
Average											
Min	8.5	37	47	4.2	9.6	5.5	13	8.2	11	45	188

NOTE:

Appliance Audit: includes fixed and non-fixed appliances
 heating/cooling
 fridge/freezer
 washer/dryer
 Entertainment systems
 Computer/home office systems

Energy Makeovers' Option 1 (full thermal assessment) Assessment Fee ⁽¹⁾	
Assumption	Calculation
Qualified assessors undertake assessment - visits home	Average charge out for time taken at \$90/hr ⁽²⁾
<ul style="list-style-type: none"> • Assessment of: <ul style="list-style-type: none"> (a) thermal shell aspect of the assessment (requires a floor plan to be available or to be prepared) (b) fixed heating/ cooling/ hot water/ lighting/ drying and outdoor areas plus water/renewables/peak load/ pools outdoor areas plus water/ renewables/ peak load/ pools • Assumed use of technology (laser measurement connected to plan drawing device) to speed drawing of house plans 	<p>Average costs considering known elements:</p> <ul style="list-style-type: none"> (a) \$71 - 47 min to draw plan (if required) (b) \$211 – 141 min for thermal shell assessment where plans available (to measure up and enter thermal shell data – technology supported) (c) \$112 – 75 min Sustainability and Efficiency Evaluation of Dwelling (SEED) report (with recommendations) and travelling <p><i>Note: Items (a) and (b) total 188 mins (as per “Site Measurement and Data Collection Times” table above)</i></p>
Estimated assessor fee:	\$394 per average house

Note:

(1) Refer Appendix G – Energy Makeovers Option 1 RBMD Mock Report

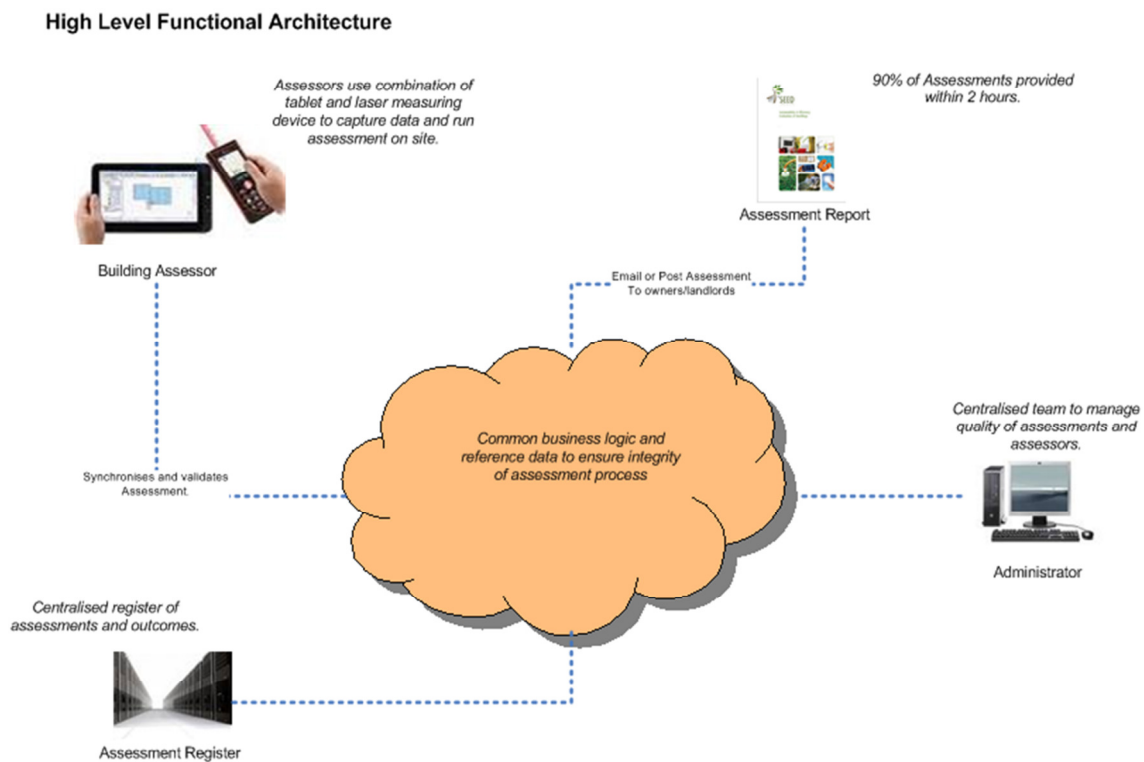
(2) The RBMD RIS uses a charge rate of \$132/hr for Option 1. This charge rate is the market “architect rate” and is considered too high for Certificate IV/Diploma level RBMD assessors in the future. Energy Makeovers believes that \$90/hr. will attract professional RBMD assessors with NatHERS rating skills. An hourly rate of \$90/hr for a fulltime RBMD assessor will translate into assessor remuneration of \$70,000 to \$90,000 per annum, depending on utilisation rates achieved.

Energy Makeovers and its partners could deliver a “simplified NatHERS-based” tool (enhanced Option 2 with plan) for around \$200

Energy Makeovers, DoubleIQ (Energy Makeovers’ IT partner) and other partners anticipate that a “simplified NatHERS-based (enhanced Option 2 with plan) tool”, costing around \$200, can be developed ready for the potential introduction of RBMD in the second half of 2012.

Energy Makeovers’ proposed enhanced Option 2 solution, whilst not a full thermal assessment (defined as Option 1), does require a floor plan (with orientation) and therefore can be viewed as a “more accurate Option 2” than that currently envisioned by the RIS for Option 2.

Efficient online functional architecture



Energy Makeovers and its partners with advice from interested leading industry bodies plans to develop a web-based, online residential building mandatory disclosure tool that meets the RBMD objectives stipulated by the Federal Department of Climate Change and Energy Efficiency (DCCEE) for RBMD.

It is intended that Energy Makeovers, DoubleIQ and other partners will develop a set of “data input simplification rules” that will be carefully crafted and field-tested in consultation with key industry stakeholders. These simplified inputs will be integrated with NatHERS-based calculation modules (and the Chenath engine) to enable a robust RBMD tool to be developed that has the following attributes:

- a. cost-effective and with the greatest NPV of all feasible mandatory disclosure options
- b. measures energy consumption and carbon emissions and meets industry accuracy standards
- c. enables new and existing building ratings to be directly compared
- d. is ubiquitous and freely available to all qualified industry participants and the professional assessor community at reasonable cost

The proposed RBMD tool would include:

1. extension of the “traditional” NatHERS-based tool to include actual fixed (structural) appliances
2. conversion of the actual energy consumption of the dwelling to actual carbon emissions
3. delivery of the new RBMD tool online, using “in-the-cloud” technology
4. full integration of all software to allow a RBMD rating to be prepared and delivered to the seller/agent before leaving site (in under 2.5 hours)

In addition to the basic RBMD rating and as part of the RBMD tool outputs, the project sponsors will develop an integrated value-adding “project ranking” retrofit module to enable accurate ranking of thermal and appliance efficiency improvement projects by financial payback and emissions reductions. This will be achieved by “extending” the RBMD tool to integrate with existing and future third party databases containing:

- a) information from manufacturers/suppliers/others providing price and performance data for different energy efficient appliances and brands
- b) energy import/export data from utilities/smart meters
- c) “white certificate” scheme credits (eg. Victorian Energy Efficiency Target (VEET) scheme)
- d) other government rebate schemes that may apply

Benefits to industry/households/government

The table below summarises the benefits expected to flow to households, industry and government from the proposed collaborative partnership between Energy Makeovers, DoubleIQ and other partners:

	New products / services to be offered by Energy Makeovers and DoubleIQ	Benefits to households/industry/government
Residential mandatory disclosure	New web-based online mandatory disclosure rating tool(s) developed to be made widely available to all qualified industry participants	<p><u>Industry</u></p> <p>Designers:</p> <ul style="list-style-type: none"> ○ Able to provide a mandatory disclosure rating at time of designing new buildings <p>Building owners/developers:</p> <ul style="list-style-type: none"> ○ able to “desk top model” different structural building envelopes/thermal configurations, appliance and behaviour profiles with their designers to optimise residential mandatory disclosure ratings for new and existing buildings <p>Suppliers of energy efficient appliances / local energy supply systems:</p> <ul style="list-style-type: none"> ○ able to accurately demonstrate the relative benefits of their products to measure their specific energy and carbon impacts on the overall mandatory disclosure rating for new and existing buildings <p><u>Households (Sellers, Buyers, Maintainers)</u></p> <ul style="list-style-type: none"> ○ able to “desk top model” different structural building envelopes/thermal configurations, appliance and behaviour profiles with their designers to achieve the optimal mandatory disclosure rating for their existing or proposed building ○ select efficient product and appliance upgrade projects using suppliers’ data to measure specific energy and carbon impacts on the overall mandatory disclosure rating

		<p><u>Governments/regulators</u></p> <ul style="list-style-type: none"> ○ cost-effective mandatory disclosure tool (greatest NPV of all feasible options) <ul style="list-style-type: none"> a. measures energy consumption and carbon emissions and meets industry accuracy standards b. enables new and existing building ratings to be directly compared c. is ubiquitous and freely available to all qualified industry participants and the professional assessor community at reasonable cost ○ Governments may accredit this new mandatory disclosure tool(s) to facilitate improved regulations for energy and carbon abatement ○ A new high-performing mandatory disclosure tool will facilitate future options for governments to regulate “forced abatement pathways” in the residential sector ○ Access to critical industry data that can support and inform policy direction (eg. relationship between ratings and property value)
<p>Retrofits (no building permit required)</p>	<p>Technology will be made available to industry participants to “power” sophisticated assessment tools for thermal and appliance “project ranking” to achieve low to negative energy/carbon design</p>	<p><u>Industry</u></p> <p>Designers:</p> <ul style="list-style-type: none"> ○ Online tool will fill a gap in the market by enabling designers to achieve low to negative emission outcomes for renovations / retrofits <p>Building owners/developers:</p> <ul style="list-style-type: none"> ○ able to “desk top model” different renovation/retrofit options including building envelopes/thermal configurations, appliance and behaviour profiles with their designers to achieve low to negative emission outcomes

		<p>Suppliers of materials/equipment:</p> <ul style="list-style-type: none"> ○ able to accurately demonstrate the relative benefits of their products, by using these new design tools to measure specific energy and carbon impacts on the overall design of the renovation /retrofit project <p><u>Households (Renovators)</u></p> <ul style="list-style-type: none"> ○ able to “desk top model” different renovation/retrofit options including building envelopes/thermal configurations, appliance and behaviour profiles with their designers to achieve low to negative emission outcomes ○ select efficient products and appliances, by using the proposed tool to measure their specific energy and carbon impacts on the overall design of the renovation / retrofit improvement project <p><u>Governments/regulators</u></p> <ul style="list-style-type: none"> ○ Governments will be able to accredit this new class of “carbon design” tool to facilitate improved regulations for energy and carbon abatement through existing regulatory bodies such as the Nationwide House Energy Rating Scheme(NatHERS) Administrator ABCB ○ Access to critical industry data that can support and inform policy direction (eg. relationship between ratings and property value)
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Assessment fee for enhanced Option 2 (simplified thermal assessment using NatHERS with plan) is expected to be around \$200

Energy Makeovers' Option 2 (simplified thermal assessment using NatHERS with plan) Assessment Fee	
Assumption	Calculation
Qualified assessors undertake assessment - visits home	Average charge out for time taken at \$90/hr
<ul style="list-style-type: none"> • Assessment of: <ul style="list-style-type: none"> (a) thermal shell aspect of the assessment (requires a floor plan to be available or to be prepared) (b) fixed heating/ cooling/ hot water/ lighting/ drying and outdoor areas plus water/renewables/peak load/ pools outdoor areas plus water/ renewables/ peak load/ pools • Assumed use of technology (laser measurement connected to plan drawing device) to speed drawing of house plans 	Average costs considering known elements: <ul style="list-style-type: none"> (a) \$23 - 15 min to draw basic external plan (b) \$90 - 60 min for thermal shell assessment using basic external plan – technology supported (c) \$90 - 60 min appliance data collection, project recommendations and travelling
Estimated assessor fee:	\$203 per average house

NPV calculations show that Energy Makeovers enhanced Option 2 (simplified thermal assessment, NatHERS with plan) solution is best for the community

The analysis below shows that the proposed Energy Makeovers’ enhanced Option 2 solution has a higher NPV than the current estimate for Option 2 (in the RIS). This is due to the fact that the Energy Makeovers’ RBMD tool uses a floor plan (with orientation) enabling a similar accuracy to that envisaged in Option 1 in the RIS. Though Energy Makeovers’ Option 2 takes around 10-15 mins longer to complete than the RIS Option 2, with more accurate thermal modelling it can claim the same activity uptake and greenhouse benefits as the RIS Option 1.

As a result, Energy Makeovers' Option 2 RBMD tool has the highest NPV of any of the proposed options (see below) of \$1,064 million.

NPV of Cost and Benefits (\$M) for disclosure at point of sale and lease				
	RIS Option 1	RIS Option 2	Energy Makeovers Option 1 (mockup)	Energy Makeovers Option 2 (with plan)
Assessments	\$ 5,196	\$ 1,121	\$ 2,686	\$ 1,343
Investments	\$ 564	\$ 476	\$ 564	\$ 564
Time	\$ 383	\$ 189	\$ 383	\$ 189
Households Subtotal	\$ 6,143	\$ 1,786	\$ 3,633	\$ 2,096
Real Estate Agent Time	\$ 59	\$ 59	\$ 59	\$ 59
Assessor Training and Insurance	\$ 54	\$ 21	\$ 54	\$ 54
Industry Subtotal	\$ 113	\$ 80	\$ 113	\$ 113
Rebates/Subsidies	\$ 75	\$ 65	\$ 75	\$ 75
Establishment and Administration (States/Territories)	\$ 117	\$ 99	\$ 117	\$ 117
Establishment and Administration (Commonwealth)	\$ 9	\$ 9	\$ 9	\$ 9
Government Subtotal	\$ 201	\$ 173	\$ 201	\$ 201
TOTAL COST	\$ 6,457	\$ 2,039	\$ 3,947	\$ 2,410
Potential Energy and Water Bill Savings	\$ 3,319	\$ 2,827	\$ 3,319	\$ 3,319
Households Subtotal	\$ 3,319	\$ 2,827	\$ 3,319	\$ 3,319
Potential Greenhouse Gas Savings	\$ 155	\$ 131	\$ 155	\$ 155
Society Subtotal	\$ 155	\$ 131	\$ 155	\$ 155
TOTAL BENEFITS	\$ 3,474	\$ 2,958	\$ 3,474	\$ 3,474
TOTAL NET BENEFIT	-\$ 2,983	\$ 919	-\$ 473	\$ 1,064

RBMD risks and recommended mitigation strategies

Notwithstanding the experience that Energy Makeovers and its partners have in conducting complex NatHERS-based assessments of dwellings, we recognise that the proposed solution is yet to be built and tested. There is, therefore, significant risks attached this proposed development project. We have identified some of the key risks in the table below with brief recommendations for mitigation:

RBMD risks	Recommended mitigation strategies
Technology	<ul style="list-style-type: none"> • Base RBMD tools on extensions of proven, credible NatHERS software (algorithms and reference database) • CSIRO to oversee technical development to ensure technical efficacy of final solution(s)
Economic	<ul style="list-style-type: none"> • Ensure adequate funding (private and/or public) for development, maintenance and ongoing governance of RBMD solution(s)
Political	<ul style="list-style-type: none"> • Through the existing COAG NFEES BIC governance structure ensure that RBMD solution is “nationally consistent” • Establish an “RBMD Industry Reference Group”, comprising key industry stakeholders, to work with BIC to ensure that the solution is nationally consistent and economically efficient for business and community • Consider appointing CSIRO as the Chair of the proposed RBMD Industry Reference Group
Social	<ul style="list-style-type: none"> • BIC to research community attitudes to RBMD • Develop programs to educate and inform the property industry and the community about RBMD as appropriate • Establish a National Register for RBMD ratings and engage the Australian Bureau of Statistics to investigate the link between ratings and property value (building on the earlier ACT study)

In view of the risks identified above, Energy Makeovers and its partners would appreciate the support, encouragement and guidance of the National Framework for Energy Efficiency (NFEES) Building Implementation Committee (BIC) to ensure that its proposed significant investment in mandatory disclosure is protected so that in due course it will benefit not only the project sponsors but the community, industry and government.

Impact of the proposed carbon tax/ETS legislation on RBMD economics

At the time of writing this submission, it seems plausible that the carbon tax legislation will be introduced to parliament before the end of September with the possibility of becoming law by the end of October. Should this be the case, the implications for the RBMD economic modelling include:

1. An increase in the assumed price of carbon to \$23 per tonne
2. A reduction in the value of offshore carbon offsets (eg. CDM CERS from Indonesia) that will be need to be purchased by Australian companies facing an ETS compliance obligation. The reduction will be greater for those RIS options with greater energy efficiency uptake rates.