

# Барилга байгууламж дахь эрчим хүчний үр ашгийг дээшлүүлэхэд чиглэсэн суурь сургалт

Module 1 Topic 4 эрчим хүчний үр ашигтай барилгын зураг төсөл “EDGE” үнэлгээний систем II

Монгол дахь барилга байгууламжийн эрчим хүчний үр ашгийг дээшлүүлэх нь төсөл | 5-сар 2020



Excellence In Design  
For Greater Efficiencies

# GREEN BUILDINGS FOR A SMARTER WORLD

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EDGE нь урьд өмнө байгаагүй хурдан мөн хялбараар  
ногоон байгууламжийг барих боломжтой болгож  
байна.

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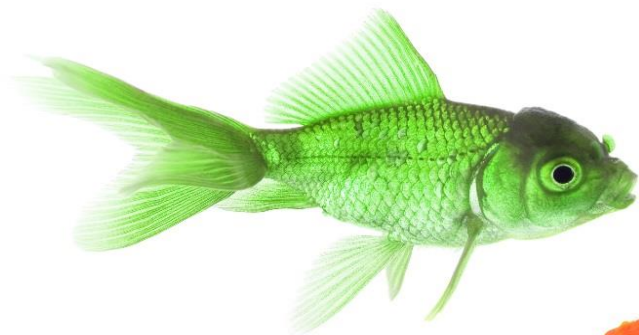


EDGE is an innovation of IFC, a member of  
the World Bank Group.

## БАРИЛГЫН “НОГООН” ЗУРАГ ТӨСЛИЙГ БОЛОВСРУУЛАХАД ЯМАР ШИЙДЛҮҮДИЙГ СОНГОХОО ХЭРХЭН МЭДЭХ ВЭ?

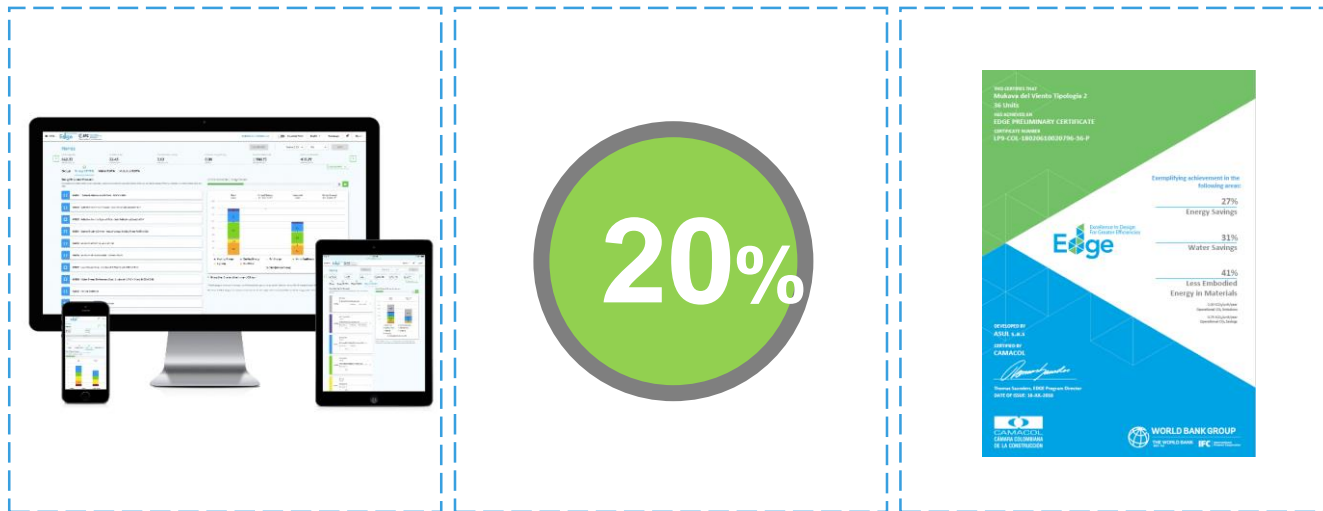


**БАРИЛГЫН ЗАХ ЗЭЭЛИЙН ЭРЭЛТИЙГ ХЭРХЭН  
НЭМЭГДҮҮЛЭХ ВЭ?**



**БАРИЛГЫГ НОГООН  
БОЛГОСНООР....**

# EDGE НЬ ҮҮНИЙ ШИЙДЭЛ ЮМ: ПРОГРАММ ХАНГАМЖ, СТАНДАРТ БӨГӨӨД МӨН НОГООН БАРИЛГЫН ҮНЭЛГЭЭНИЙ СИСТЕМ.



EDGE СТАНДАРТ НЬ НӨӨЦИЙН ҮР АШИГТ  
АНХААРЧ, ГЭРЧИЛГЭЭГ АВАХАД ДӨХӨМ БАЙХААР  
ЗОХИОГДСОН.



# ЭНЭХҮҮ НЭЭЛТТЭЙ ЭХ ҮҮСВЭРИЙН ҮНЭГҮЙ ПРОГРАММ НЬ ӨӨРИЙНХӨӨ БАРИЛГЫН ДИЗАЙНЫ НӨӨЦИЙН ЭРЧМИЙГ ХЭРХЭН БУУРУУЛЖ БОЛОХЫГ ХАРУУЛДАГ.





Homes

DASHBOARD

Version 2.1.5

File

SAVE

Final Energy Use	Final Water Use	Operational CO <sub>2</sub> Savings	Embodied Energy Savings	Base Case Utility Cost	Utility Cost Reduction
932.19 kWh/Month/Unit	22.45 kl/Month/Unit	0.00 tCO <sub>2</sub> /Year/Unit	0.00 MJ/Unit	1,988.73 ZAR/Month/Unit	- ZAR/Month/Unit

HIDE RESULTS

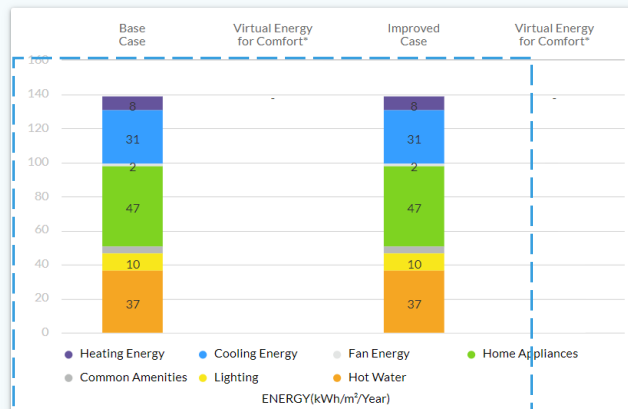
Design **Energy 0.00%** Water 0.00% Materials 0.00%

Energy Efficiency Measures

By entering the design details of your subproject, you have created your base case building. Next, you will choose energy efficiency measures to achieve savings of at least 20%.

- HME01\* Reduced Window to Wall Ratio - WWR of 30%
- HME02 Reflective Paint/Tiles for Roof - Solar Reflectivity (albedo) of 0.7
- HME03 Reflective Paint for External Walls - Solar Reflectivity (albedo) of 0.7
- HME04 External Shading Devices - Annual Average Shading Factor (AASF) of 0.8
- HME05 Insulation of Roof : U-value of 0.18
- HME06 Insulation of External Walls : U-value of 0.25
- HME07 Low-E Coated Glass : U-value of 3 W/m<sup>2</sup>:K and SHGC of 0.45

ENERGY SAVINGS: 0.00%



## Homes

DASHBOARD

Version 2.1.5

File

SAVE

Final Energy Use

556.74

kWh/Month/Unit

Final Water Use

22.45

kL/Month/Unit

Operational CO<sub>2</sub> Savings

4,35

tCO<sub>2</sub>/Year/Unit

Embodied Energy Savings

-5,675.63

MJ/Unit

Base Case Utility Cost

1,988.73

ZAR/Month/Unit

Utility Cost Reduction

581.95

ZAR/Month/Unit

HIDE RESULTS

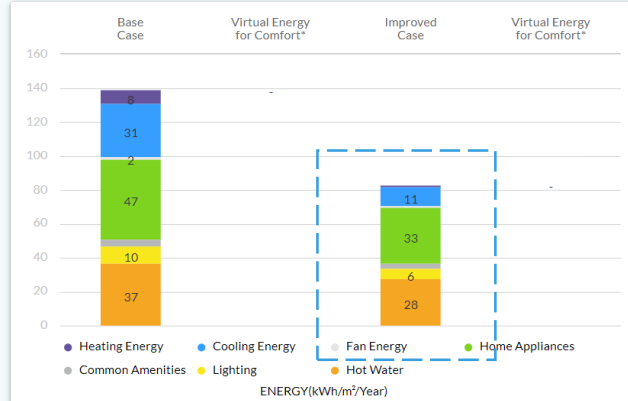
Design Energy 40.28% Water 0.00% Materials -2.44%

### Energy Efficiency Measures

By entering the design details of your subproject, you have created your base case building. Next, you will choose energy efficiency measures to achieve savings of at least 20%.

- HME01\* Reduced Window to Wall Ratio -
- HME02 Reflective Paint/Tiles for Roof - Solar Reflectivity (albedo) of 0.7
- HME03 Reflective Paint for External Walls - Solar Reflectivity (albedo) of 0.7
- HME04 External Shading Devices - Annual Average Shading Factor (AASF) of 0.8
- HME05 Insulation of Roof : U-value of 0.18
- HME06 Insulation of External Walls : U-value of 0.25
- HME07 Low-E Coated Glass : U-value of 3 W/m<sup>2</sup>.K and SHGC of 0.45

40.28% Meets EDGE Energy Standard



# EDGE НЬ БУСАД ТӨРЛИЙН ҮНЭЛГЭЭНИЙ СИСТЕМҮҮДЭЭС ЯЛГААТАЙ ЮМ.



**САНХҮҮГИЙН ТООЦООЛОЛ** Бусад ямар ч үнэлгээний системд ногоон болгох зардлыг тооцох үнэгүй программ хангамж байдаггүй.



**ТООН ҮЗҮҮЛЭЛТ** EDGE нь хэмжиж болохуйц өвөрмөц арга барил бүхий төсөвлөсөн гүйцэтгэлийг ашигладаг.



**НЭГ ЦОНХНЫ ҮЙЛЧИЛГЭЭ**

Үр ашгийн загварчлалыг EDGE дээр гүйцэтгэж, үнэлгээний үйл явцыг бүхэлд нь программын хүрээнд хийж болно.



**ТӨСЛИЙН НЭГДЭЛ** ГЭРЧИЛГЭЭНД НИЙЦҮҮЛЭХЭД НЭХЭМЖЛЭЛ, ФОТО ЗУРАГ БОЛОН ЦӨӨН ТООНЫ АРХИТЕКТОРЫН ЗУРГУУД ШААРДЛАГАТАЙ.



**ОРЧИН НӨХЦӨЛД НИЙЦСЭН** EDGE НЬ ХАМГИЙН ЗӨВ ҮР ДҮНГ ГАРГАХАД ТУСТАЙ УУР АМЬСГАЛЫН БОЛОН АМЬДРАЛЫН ХЭВ МАЯГИЙН ӨГӨГДЛҮҮДИЙГ АГУУЛДАГ.  
**НОГООН БАРИЛГЫГ БҮГДЭД** Хурдан бөгөөд хямд тул EDGE нь үнэлгээг хүн бүрд хялбар болгож өгдөг.

# НОГООН ТӨСЛҮҮДИЙН БАГЦ ҮҮСГЭЖ, ДЭЛХИЙН НИЙТИЙН МАНЛАЙЛЛЫН ӨСӨН НЭМЭГДЭЖ БҮЙ НИЙГЭМЛЭГИЙН НЭГ ХЭСЭГ БОЛОХ



THIS CERTIFIES THAT  
Climate Change Resilient Pilot Office  
HAS ACHIEVED AN  
EDGE CERTIFICATE  
CERTIFICATE NUMBER  
LP6-PHL-18081610039425

Exemplifying achievement in the  
following areas:

61%

Energy Savings

95%

Water Savings

79%

Less Embodied  
Energy in Materials

4.10 tCO<sub>2</sub>/year  
Operational CO<sub>2</sub> Emissions  
1.05 tCO<sub>2</sub>/year  
Operational CO<sub>2</sub> Savings



DEVELOPED BY  
BISCAST  
CERTIFIED BY  
Philippine GreenBuilding Initiative

Engr. Ramon D. Aguilos, EDGE Program Director  
DATE OF ISSUE: 29-JUL-2019



WORLD BANK GROUP  
THE WORLD BANK IFC International Finance Corporation

PHILIPPINE  
GREEN  
BUILDING  
INITIATIVE



THIS CERTIFIES THAT  
Climate Change Resilient Pilot Office  
Panafrancia Ave.  
Naga City, 4400  
Philippines

DEVELOPED BY  
BISCAST

HAS ACHIEVED AN  
EDGE CERTIFICATE

CERTIFICATE NUMBER  
LP6-PHL-18081610039425

WAS AUDITED BY  
Antonette Marquez  
EDGE Software Version: v2.1.5

CERTIFIED BY  
Philippine GreenBuilding Initiative

Engr. Ramon D. Aguilos, EDGE Program Director



DATE OF ISSUE  
29-JUL-2019



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#### ENERGY MEASURES

- Reduced Window to Wall Ratio
- Reflective Paint/Fins for Roof
- Reflective Paint for External Walls
- External Shading Devices
- Insulation of Roof
- Insulation of External Walls
- Manual Ventilation with Operable Windows and No A/C
- Ceiling Fans for Office Spaces
- Energy-Saving Light Bulbs - Internal Spaces
- Energy-Saving Light Bulbs - External Spaces
- Lighting Controls for Corridors and Staircases
- Solar Photovoltaics

#### WATER MEASURES

- Low-Flow Faucets in Bathrooms
- Dual Flush for Water Closets in Bathrooms
- Water-Efficient Faucets for Kitchen Sinks
- Rainwater Harvesting System
- Gray Water Treatment and Recycling System
- Black Water Treatment and Recycling System

#### MATERIALS

- Floor Slabs - Concrete Filler Slab
- Roof Construction - Sheet (Zinc or Galvanized Iron) Sheets on Timber Rafters
- External Walls - Medium Weight Hollow Concrete Blocks
- Internal Walls - Plasterboards on Timber Studs
- Flooring - Ceramic Tile
- Flooring - Finished Concrete Floor
- Window Frames - Aluminum

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The EDGE standard requires 20% efficiencies in energy, water and materials compared to a local benchmark. Predicted efficiencies are not a guarantee of future operational performance. Energy savings may be associated with virtual energy for comfort depending on the presence of heating and cooling systems. Virtual energy does not contribute energy to utility bills.

This certificate is based by the Certifier based on information provided by the client and the walk by the Auditor, and is subject to the terms and conditions of the Certifier. Contact [edge@ph.org](mailto:edge@ph.org) if the above measures are not consistent with your other trades on the project.

