

## Passive Solar Intervention Charts, with associated Internal Rate of Returns (IRRs)

Please Note:

The assumed IRR required for financial feasibility is

Government: 5%

Private: 30%

### Cape Town: Modeling Results According to Building Type and Ventilation System

Low Income - Cape Town				
	Intervention	Financial Feasibility		IRR
		Government	Private	
<i>No-cost Interventions</i>	Clay Walls	yes	yes	Infinite
	North Orientation	yes	yes	Infinite
	Concrete Block Walls	yes	yes	Infinite
<i>Immediately Beneficial Capital Cost Interventions</i>	Aluminium Foil Roofing	yes	yes	83%
	Insulated Ceiling	yes	yes	32%
	Ceiling	yes	yes	31%
	2 Skin Walls with air gap	yes	no	6%
<i>No-value Interventions</i>	Tile Roof	no	no	negative
	Window Shading	no	no	negative
	Exterior Colour	no	no	Negative

Mid to High Income With A/C - Cape Town				
	Intervention	Financial Feasibility		IRR
		Government	Private	
<i>No-cost Interventions</i>	North Orientation	yes	yes	Infinite
	Clay Walls	yes	yes	Infinite
<i>Immediately Beneficial Capital Cost Interventions</i>	Insulated Ceiling	yes	yes	55%
	Aluminium Foil Roofing + Insulation	yes	yes	34%
	Aluminium Foil Roofing	yes	yes	33%
	Tile Roof	yes	no	16%
	Window Shading	yes	no	8%
<i>No-value Interventions</i>	Exterior Colour	no	no	2%
	Double Glazing	no	no	2%
	2 Skin Walls with air gap	no	no	negative

Mid to High Income Without A/C - Cape Town				
	Intervention	Financial Feasibility		IRR
		Government	Private	
<i>No-cost Interventions</i>	North Orientation	yes	yes	Infinite
	Clay Walls	yes	yes	Infinite
<i>Immediately Beneficial Capital Cost Interventions</i>	Insulated Ceiling	yes	yes	45%
	Aluminium Foil Roofing + Insulation	yes	yes	34%
	Aluminium Foil Roofing	yes	no	19%
	Tile Roof	yes	no	14%
<i>No-value Interventions</i>	Double Glazing	no	no	3%
	Exterior Colour	no	no	negative
	Window Shading	no	no	negative
	2 Skin Walls with air gap	no	no	negative

<b>Commercial With A/C - Cape Town</b>				
	<b>Intervention</b>	<b>Financial Feasibility</b>		<b>IRR</b>
		<b>Government</b>	<b>Private</b>	
<b><i>No-cost Interventions</i></b>	North Orientation	yes	yes	Infinite
<b><i>Immediately Beneficial Capital Cost Interventions</i></b>	2 Skin Walls with air gap	yes	yes	31%
	Window Shading	yes	no	20%
<b><i>No-value Interventions</i></b>	20% Window Area	no	no	3%
	50% Window Area	no	no	negative
	Double Glazing	no	no	negative
	Exterior Colour	no	no	negative

<b>Commercial Without A/C - Cape Town</b>				
	<b>Intervention</b>	<b>Financial Feasibility</b>		<b>IRR</b>
		<b>Government</b>	<b>Private</b>	
<b><i>No-cost Interventions</i></b>	North Orientation	yes	yes	Infinite
<b><i>Beneficial Cost Intervention</i></b>	2 Skin Walls with air gap	yes	no	22%
<b><i>No-value Interventions</i></b>	20% Window Area	no	no	4%
	50% Window Area	no	no	negative
	Double Glazing	no	no	negative
	Exterior Colour	no	no	negative
	Window Shading	no	no	negative

### Cape Town: Cross-Ventilation Feasibility by Building Type

Cape Town: Mid to High Income Intervention Comparison				
Government Feasibility: A/C Vs. Natural Ventilation			Government Feasibility	
<i>No-cost Interventions</i>	Intervention	A/C	Natural	
		North Orientation	yes	yes
	Clay Walls	yes	yes	
<i>Immediately Beneficial Capital Cost Interventions</i>	Insulated Ceiling	yes	yes	
	Aluminium Foil Roofing + Insulation	yes	yes	
	Aluminium Foil Roofing	yes	yes	
	Tile Roof	yes	yes	
	Window Shading	yes	no	
<i>No-value Interventions</i>	Exterior Colour	no	no	
	Double Glazing	no	no	
	2 Skin Walls with air gap	no	no	

Cape Town: Mid to High Income Intervention Comparison				
Private Feasibility: A/C Vs. Natural Ventilation			Private Feasibility	
<i>No-cost Interventions</i>	Intervention	A/C	Natural	
		North Orientation	yes	yes
	Clay Walls	yes	yes	
<i>Immediately Beneficial Capital Cost Interventions</i>	Insulated Ceiling	yes	yes	
	Aluminium Foil Roofing + Insulation	yes	yes	
	Aluminium Foil Roofing	yes	no	
<i>No-value Interventions</i>	Tile Roof	no	no	
	Window Shading	no	no	
	Exterior Colour	no	no	
	Double Glazing	no	no	
	2 Skin Walls with air gap	no	no	

Cape Town: Commercial/Office Intervention Comparison				
Government Feasibility: A/C Vs. Natural Ventilation			Government Feasibility	
<i>No-cost Interventions</i>	Intervention	A/C	Natural	
		North Orientation	yes	yes
<i>Immediately Beneficial Capital Cost Interventions</i>	2 Skin Walls with air gap	yes	yes	
	Window Shading	yes	no	
<i>No-value Interventions</i>	20% Window Area	no	no	
	50% Window Area	no	no	
	Double Glazing	no	no	
	Exterior Colour	no	no	

Cape Town: Commercial/Office Intervention Comparison				
Private Feasibility: A/C Vs. Natural Ventilation			Private Feasibility	
<i>No-cost Interventions</i>	Intervention	A/C	Natural	
		North Orientation	yes	yes
<i>Beneficial Cost Interventions</i>	2 Skin Walls with air gap	yes	no	
<i>No-value Interventions</i>	Window Shading	no	no	
	20% Window Area	no	no	
	50% Window Area	no	no	
	Double Glazing	no	no	
	Exterior Colour	no	no	

## Durban: Modeling Results According to Building Type and Ventilation System

Low Income - Durban				
	Intervention	Financial Feasibility		IRR Gov.
		Government	Private	
<i>No-cost Interventions</i>	Clay Walls	yes	yes	Infinite
	North Orientation	yes	yes	Infinite
	Concrete Block Walls	yes	yes	Infinite
<i>Immediately Beneficial Capital Cost Interventions</i>	Aluminium Foil Roofing	yes	yes	37%
	Ceiling	yes	no	23%
	Insulated Ceiling	yes	no	22%
<i>No-value Interventions</i>	2 Skin Walls with air gap	no	no	3%
	Tile Roof	no	no	negative
	Window Shading	no	no	negative
	Exterior Colour	no	no	negative

Mid to High Income With A/C - Durban				
	Intervention	Financial Feasibility		IRR
		Government	Private	
<i>No-cost Interventions</i>	North Orientation	yes	yes	Infinite
	Clay Walls	yes	yes	Infinite
<i>Immediately Beneficial Capital Cost Interventions</i>	Insulated Ceiling	yes	yes	34%
	Aluminium Foil Roofing	yes	no	26%
	Aluminium Foil Roofing + Insulation	yes	no	21%
	2 Skin Walls with air gap	yes	no	14%
	Tile Roof	yes	no	6%
<i>No-value Interventions</i>	Exterior Colour	no	no	negative
	Window Shading + North Orientation	no	no	negative
	Double Glazing	no	no	negative

Mid to High Income Without A/C - Durban				
	Intervention	Financial Feasibility		IRR
		Government	Private	
<i>No-cost Interventions</i>	North Orientation	yes	yes	Infinite
	Clay Walls	yes	yes	Infinite
<i>Immediately Beneficial Capital Cost Interventions</i>	Insulated Ceiling	yes	no	14%
	Aluminium Foil Roofing	yes	no	13%
	Aluminium Foil Roofing + Insulation	yes	no	13%
	2 Skin Walls with air gap	yes	no	9%
	Tile Roof	yes	no	5%
<i>No-value Interventions</i>	Double Glazing	no	no	negative
	Exterior Colour	no	no	negative
	Window Shading + North Orientation	no	no	negative

<b>Commercial With A/C - Durban</b>				
	<b>Intervention</b>	<b>Financial Feasibility</b>		<b>IRR</b>
		<b>Government</b>	<b>Private</b>	
<b><i>No-cost Interventions</i></b>	North Orientation	yes	yes	Infinite
<b><i>Immediately Beneficial Capital Cost Interventions</i></b>	2 Skin Walls with air gap	yes	no	18%
	Window Shading	yes	no	12%
<b><i>No-value Interventions</i></b>	20% Window Area	no	no	4%
	50% Window Area	no	no	negative
	Double Glazing	no	no	negative
	Exterior Colour	no	no	negative

<b>Commercial Without A/C - Durban</b>				
	<b>Intervention</b>	<b>Financial Feasibility</b>		<b>IRR</b>
		<b>Government</b>	<b>Private</b>	
<b><i>No-cost Interventions</i></b>	North Orientation	yes	yes	Infinite
<b><i>Immediately Beneficial Capital Cost Interventions</i></b>	20% Window Area	yes	no	7%
<b><i>No-value Interventions</i></b>	2 Skin Walls with air gap	no	no	negative
	50% Window Area	no	no	negative
	Double Glazing	no	no	negative
	Exterior Colour	no	no	negative
	Window Shading	no	no	negative

## Durban: Cross-Ventilation Feasibility by Building Type

Durban: Mid to High Income Intervention Comparison				
Government Feasibility: A/C Vs. Natural Ventilation			Government Feasibility	
No-cost Interventions	Intervention	A/C	Natural	
		North Orientation	yes	yes
	Clay Walls	yes	yes	
Immediately Beneficial Capital Cost Interventions	Insulated Ceiling	yes	yes	
	Aluminium Foil Roofing + Insulation	yes	yes	
	Aluminium Foil Roofing	yes	yes	
	Tile Roof	yes	yes	
	2 Skin Walls with air gap	yes	yes	
No-value Interventions	Exterior Colour	no	no	
	Double Glazing	no	no	
	Window Shading	no	no	

Durban: Mid to High Income Intervention Comparison				
Private Feasibility: A/C Vs. Natural Ventilation			Private Feasibility	
No-cost Interventions	Intervention	A/C	Natural	
		North Orientation	yes	yes
	Clay Walls	yes	yes	
Immediately Beneficial Capital Cost Interventions	Insulated Ceiling	yes	no	
	Aluminium Foil Roofing + Insulation	no	no	
	Aluminium Foil Roofing	no	no	
	Tile Roof	no	no	
	2 Skin Walls with air gap	no	no	
No-value Interventions	Exterior Colour	no	no	
	Double Glazing	no	no	
	Window Shading	no	no	

Durban: Commercial/Office Intervention Comparison				
Government Feasibility: A/C Vs. Natural Ventilation			Government Feasibility	
No-cost Interventions	Intervention	A/C	Natural	
		North Orientation	yes	yes
Immediately Beneficial Capital Cost Interventions	2 Skin Walls with air gap	yes	no	
	Window Shading	yes	no	
	20% Window Area	no	yes	
No-value Interventions	50% Window Area	no	no	
	Double Glazing	no	no	
	Exterior Colour	no	no	

Durban: Commercial/Office Intervention Comparison				
Private Feasibility: A/C Vs. Natural Ventilation			Private Feasibility	
No-cost Interventions	Intervention	A/C	Natural	
		North Orientation	yes	yes
No-value Interventions	2 Skin Walls with air gap	no	no	
	Window Shading	no	no	
	20% Window Area	no	no	
	50% Window Area	no	no	
	Double Glazing	no	no	
	Exterior Colour	no	no	

### Pretoria: Modeling Results According to Building Type and Ventilation System

Low Income - Pretoria				
	Intervention	Financial Feasibility		IRR
		Government	Private	
<i>No-cost Interventions</i>	Clay Walls	yes	yes	Infinite
	North Orientation	yes	yes	Infinite
	Concrete Block Walls	yes	yes	Infinite
<i>Immediately Beneficial Capital Cost Interventions</i>	Aluminium Foil Roofing	yes	yes	52%
	Insulated Ceiling	yes	yes	37%
	Ceiling	yes	yes	36%
	2 Skin Walls with air gap	yes	no	8%
<i>No-value Interventions</i>	Tile Roof	no	no	negative
	Window Shading	no	no	negative
	Exterior Colour	no	no	negative

Mid to High Income With A/C - Pretoria				
	Intervention	Financial Feasibility		IRR
		Government	Private	
<i>No-cost Interventions</i>	North Orientation	yes	yes	Infinite
	Clay Walls	yes	yes	Infinite
<i>Immediately Beneficial Capital Cost Interventions</i>	Insulated Ceiling	yes	yes	45%
	Aluminium Foil Roofing + Insulation	yes	yes	31%
	Aluminium Foil Roofing	yes	no	23%
	Tile Roof	yes	no	12%
	2 Skin Walls with air gap	yes	no	8%
<i>No-value Interventions</i>	Double Glazing	no	no	4%
	Window Shading + North Orientation	no	no	negative
	Exterior Colour	no	no	negative

Mid to High Income Without A/C - Pretoria				
	Intervention	Financial Feasibility		IRR
		Government	Private	
<i>No-cost Interventions</i>	North Orientation	yes	yes	Infinite
	Clay Walls	yes	yes	Infinite
<i>Immediately Beneficial Capital Cost Interventions</i>	Insulated Ceiling	yes	yes	42%
	Aluminium Foil Roofing + Insulation	yes	yes	31%
	Aluminium Foil Roofing	yes	no	18%
	Tile Roof	yes	no	16%
	Double Glazing	yes	no	8%
	2 Skin Walls with air gap	yes	no	6%
<i>No-value Interventions</i>	Window Shading + North Orientation	no	no	negative
	Exterior Colour	no	no	negative

<b>Commercial With A/C - Pretoria</b>				
	<b>Intervention</b>	<b>Financial Feasibility</b>		<b>IRR</b>
		<b>Government</b>	<b>Private</b>	
<b>No-cost Interventions</b>	North Orientation	yes	yes	Infinite
<b>Immediately Beneficial Capital Cost Interventions</b>	2 Skin Walls with air gap	yes	yes	49%
	20% Window Area	yes	no	12%
	Window Shading	yes	no	7%
<b>No-value Interventions</b>	Exterior Colour	no	no	negative
	Double Glazing	no	no	0%
	50% Window Area	no	no	0%

<b>Commercial Without A/C - Pretoria</b>				
	<b>Intervention</b>	<b>Financial Feasibility</b>		<b>IRR</b>
		<b>Government</b>	<b>Private</b>	
<b>No-cost Interventions</b>	North Orientation	yes	yes	Infinite
<b>Immediately Beneficial Capital Cost Interventions</b>	2 Skin Walls with air gap	yes	yes	39%
	20% Window Area	yes	no	14%
<b>No-value Interventions</b>	50% Window Area	no	no	4%
	Double Glazing	no	no	negative
	Window Shading	no	no	negative
	Exterior Colour	no	no	negative

### Pretoria: Cross-Ventilation Feasibility by Building Type

Pretoria: Mid to High Income Intervention Comparison			
Government Feasibility: A/C Vs. Natural Ventilation		Government Feasibility	
<i>No-cost Interventions</i>	Intervention	A/C	Natural
		North Orientation	yes
	Clay Walls	yes	yes
<i>Immediately Beneficial Capital Cost Interventions</i>	Insulated Ceiling	yes	yes
	Aluminium Foil Roofing + Insulation	yes	yes
	Aluminium Foil Roofing	yes	yes
	Tile Roof	yes	yes
	2 Skin Walls with air gap	yes	yes
	Double Glazing	no	yes
<i>No-value Interventions</i>	Exterior Colour	no	no
	Window Shading	no	no

Pretoria: Mid to High Income Intervention Comparison			
Private Feasibility: A/C Vs. Natural Ventilation		Private Feasibility	
<i>No-cost Interventions</i>	Intervention	A/C	Natural
		North Orientation	yes
	Clay Walls	yes	yes
<i>Immediately Beneficial Capital Cost Interventions</i>	Insulated Ceiling	yes	yes
	Aluminium Foil Roofing + Insulation	yes	yes
<i>No-value Interventions</i>	Aluminium Foil Roofing	no	no
	Tile Roof	no	no
	2 Skin Walls with air gap	no	no
	Exterior Colour	no	no
	Double Glazing	no	no
	Window Shading	no	no

Pretoria: Commercial/Office Intervention Comparison			
Government Feasibility: A/C Vs. Natural Ventilation		Government Feasibility	
<i>No-cost Interventions</i>	Intervention	A/C	Natural
		North Orientation	yes
<i>Immediately Beneficial Capital Cost Interventions</i>	2 Skin Walls with air gap	yes	yes
	Window Shading	yes	no
	20% Window Area	yes	yes
<i>No-value Interventions</i>	50% Window Area	no	no
	Double Glazing	no	no
	Exterior Colour	no	no

Pretoria: Commercial/Office Intervention Comparison			
Private Feasibility: A/C Vs. Natural Ventilation		Private Feasibility	
<i>No-cost Interventions</i>	Intervention	A/C	Natural
		North Orientation	yes
<i>Beneficial Const Interventions</i>	2 Skin Walls with air gap	yes	yes
<i>No-value Interventions</i>	Window Shading	no	no
	20% Window Area	no	no
	50% Window Area	no	no
	Double Glazing	no	no
	Exterior Colour	no	no

