

Tertiary Education Sector – CAM Workshop

# Developing Measures of Asset Performance

22 February 2013

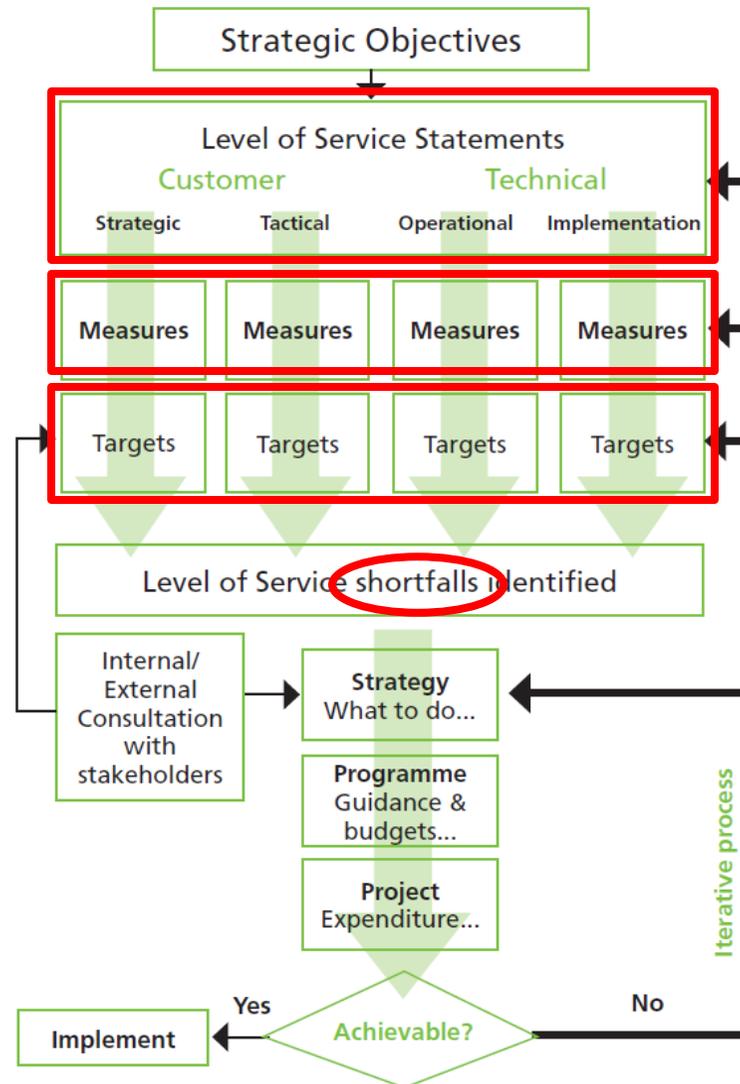


Figure 4.8 Levels of Service Process

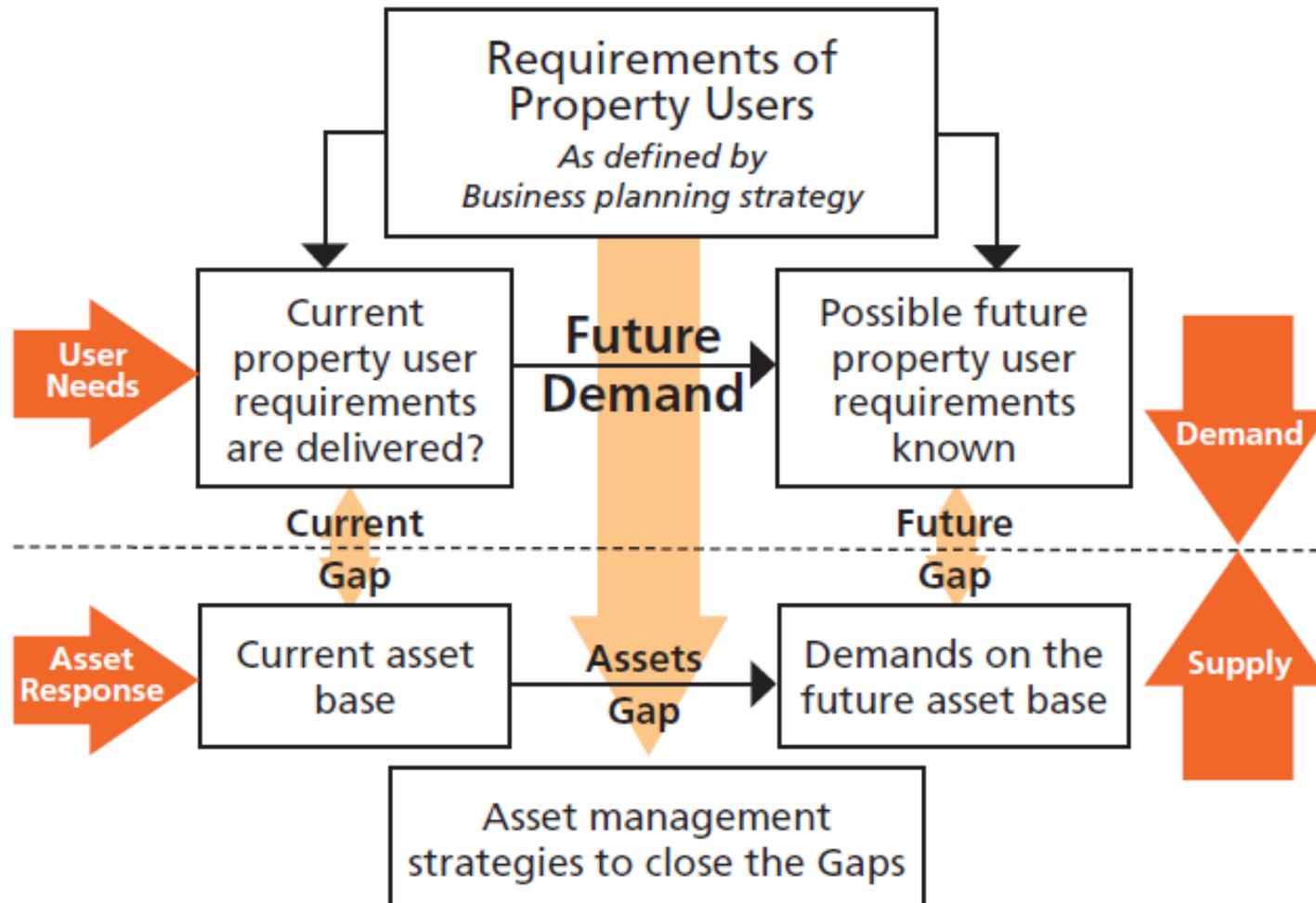
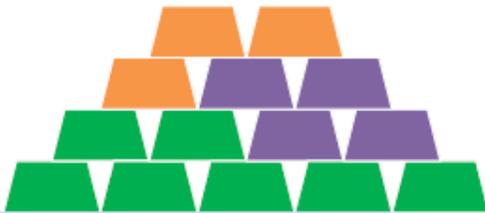


Figure 4.2 Demand vs. Supply model

## Asset Management Plans Ensure the Balance

Levels of Service



Whole-of-Life Costs



Level of  
Service 1

- Measure 1a
- Measure 1b

Level of  
Service 2

- Measure 2a
- Measure 2b
- Measure 2c

## Safe environment

- Incident rates
- Safety training
- Seismic strength

## Student Success

- Referral rates
- Completion rates
- Demographics

Level  
of  
Service

## Balanced Measures

- Financial
- Customer Satisfaction
- Internal Process
- Organisational

## Service Level Outputs Template for Auckland Libraries

#	Description	LoS Owner	Customer Oriented Measures								Technical Measure						
			Customer Value	Num	Measure	Current Baseline (or New)	Year 1 target (2012/13)	Year 2 target (2013/14)	Year 3target (2014/15)	Year 4target (2015/22)	Num	Measures	Current Baseline (or New)	Year 1 target (2012/13)	Year 2 target (2013/14)	Year 3target (2014/15)	Year 4target (2015/22)
S5.0	Provide the customer with easy access to professional, reliable, expert assistance in order to find the information they need	Libraries	Customer service	C5.1	Customers satisfied with the overall quality of service delivery	88%	90%	90%	90%	90%	T5.1.1						
				C5.2	Customers find the library experience a quality one	85%	85%	85%	85%	85%	T5.2.1						
			Civic participation	C5.3	Customers satisfied that they are able to participate in the democratic process	New	70%	70%	70%	75%	T5.3.1	# Customer complaints, suggestions, compliments	180	200	220	240	300
				C5.4	Customers agree that displays of council information are prominent and current	New	70%	70%	70%	75%							
				C5.5	Customers satisfied with library events and exhibitions	68%	75%	75%	80%	80%	T5.5.1	# Events held	1,401	1420	1440	1460	1500
								T5.5.2	# Participants at events	94,113	96,000	98,000	100,000	104,000			
S6.0	Provide technology infrastructure that enables our customers to connect with information and participate online as citizens	Libraries	Accessibility	C6.1	Customers satisfied with library public computer network	66%	70%	75%	80%	80%	T6.1.1	# of Computers per 1000 citizens	0.37	0.4	0.4	0.4	0.4
											T6.1.2	% of Opening hours that each public computer is in use	69%	70%	70%	70%	70%
			Quality	C6.2	Customers satisfied with library databases	66%	70%	75%	80%	80%							
				C6.3	Customers satisfied that the computing resource is up to date	74%	75%	75%	80%	80%	T6.3.1	% of computers aged less than 5 years	New	70%	75%	80%	80%
				C6.4	Customers satisfied with the speed of internet access	88%	90%	90%	90%	90%	T6.4.1	# of Wifi sessions	286,917	290,000	320,000	360,000	400,000
				C6.5	Customers satisfied with the on-line service for browsing/ordering	87%	90%	90%	90%	90%							
				C6.6	Customers satisfied with library websites	76%	80%	80%	80%	80%							
Customer satisfaction	C6.7	Customers agree that the public computer facilities meet their needs	66%	70%	80%	80%	80%										

## Customer based

<p><b>Level of Service</b></p> <p><b>Provide technology infrastructure that enables our customers to connect with information and participate online as citizens</b></p>	Customers satisfied with library public computer network	66%
	Customers satisfied with library databases	66%
	Customers satisfied that the computing resource is up to date	74%
	Customers satisfied with the speed of internet access	88%
	Customers satisfied with the on-line service for browsing/ordering	87%
	Customers satisfied with library websites	76%
	Customers agree that the public computer facilities meet their needs	66%

## Technical

# of Computers per 1000 citizens	0.37
% of Opening hours that each public computer is in use	69%
% of computers aged < 5 years	20%
# of Wi-fi sessions	286,917

# of Wi-fi sessions	286,917
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- This measure is quantitative and an output
- Only quantitative measure available for IT usage at the time
- Infrastructure has been put in place to allow improved measures:
  - concurrent sessions
  - unique users
  - failed sessions etc

Here's an example from a NZ TEI:

**Level of Service:** Carparks are safe and secure.

Current measure:

Target	Current Provision	Future Target
75% student satisfaction	74%	95% of student satisfied (2018)

Here's an example from a NZ TEI:

**Level of Service:** Carparks are safe and secure.

Potential additional measures:

Target	Current Provision	Future Target
Camera coverage 80%	80%	95%
CPTED Checklist compliance	87%	90%

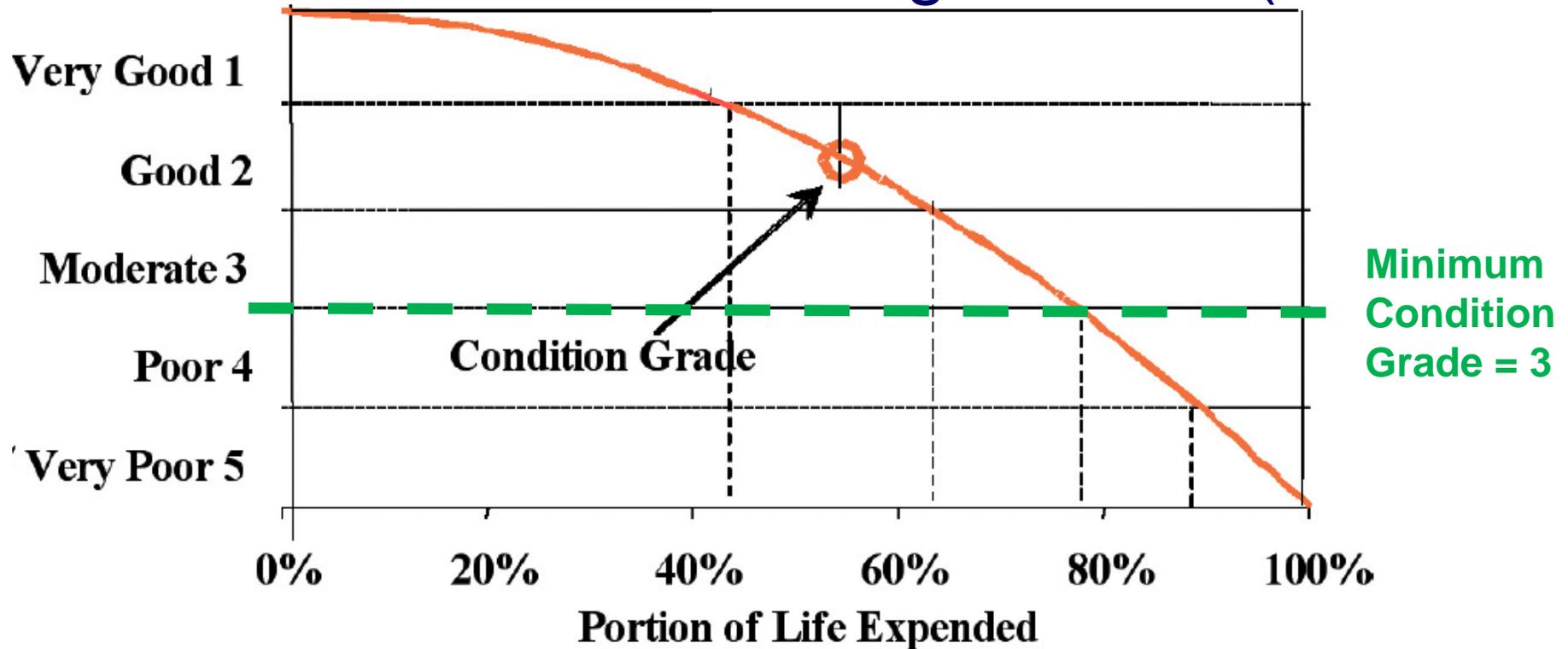
or

Non-Asset solution of escort

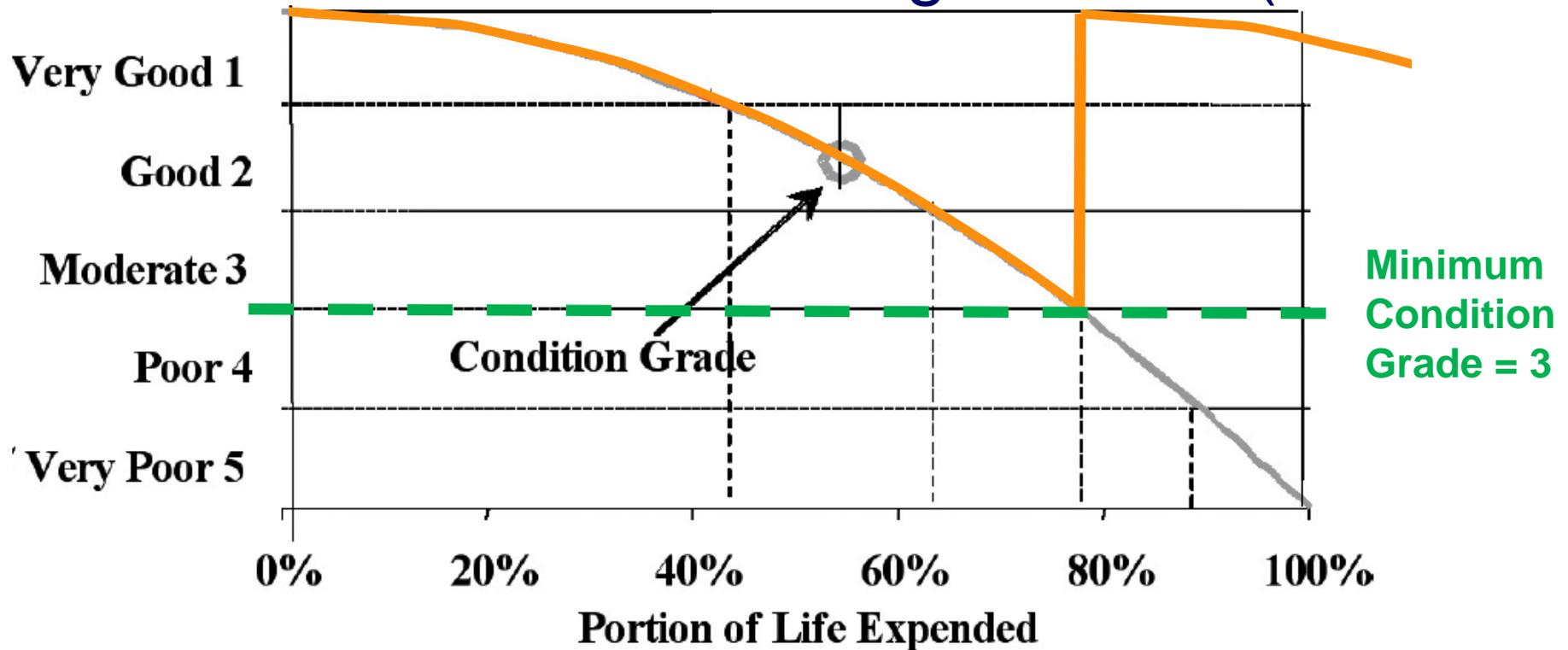
## How about condition performance measure?

Property Type		Level of Service Category	Level of Service Statement
Corporate Property	Back of House	Asset Condition	<ul style="list-style-type: none"> <li>All assets are to be replaced within two years of their forecast renewal year.</li> <li>Immediate maintenance requirements shall be addressed within two weeks, except for those with a health and safety risk which shall be dealt with within 2 working days.</li> <li>All <u>landlord</u> owned assets are replaced within 2 years of their renewal year.</li> </ul>
		Functionality	<ul style="list-style-type: none"> <li>All office areas contain at least 4m<sup>2</sup> per workstation.</li> <li>All areas have disabled access.</li> <li>All office areas are air conditioned.</li> <li>All office areas have secure wireless internet access.</li> <li>Lighting levels meet current building code levels.</li> </ul>
		Branding	<ul style="list-style-type: none"> <li>The exterior of all buildings fits the current branding scheme</li> </ul>
		Sustainability	<ul style="list-style-type: none"> <li>All lights are operated by occupancy sensors.</li> <li>Energy efficient lighting is to be used in all areas.</li> <li>All office areas contain recycling bins.</li> <li>All waste paper is recycled.</li> <li>Water saving devices to be used in all toilets.</li> </ul>
		Data Quality	<ul style="list-style-type: none"> <li>All data to be no older than 3 years.</li> <li>All components in poor or very poor condition have an associated comment.</li> <li>All components in poor or very poor condition have a photo.</li> <li>All special components have an associated comment.</li> <li>All components with a forecast renewal year within the next five years belong to a project.</li> </ul>

- Consider an increased level of service
- Condition grade is the performance measure
- Set the minimum condition grade to 3 (Moderate)

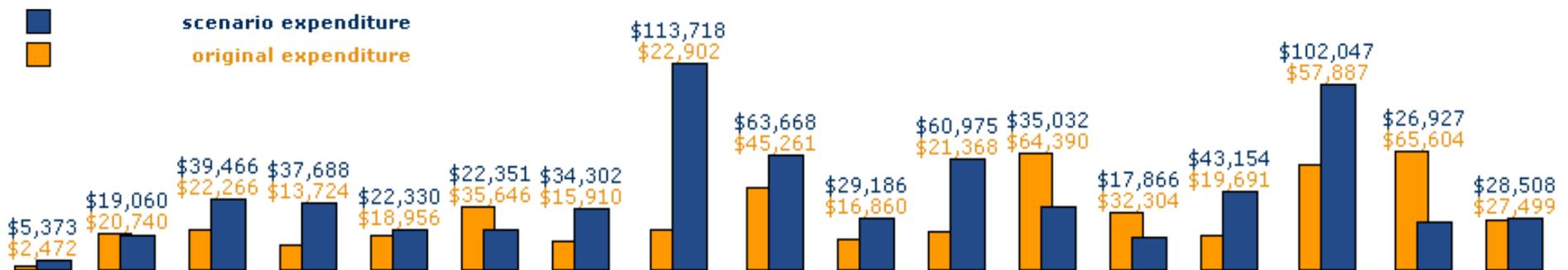


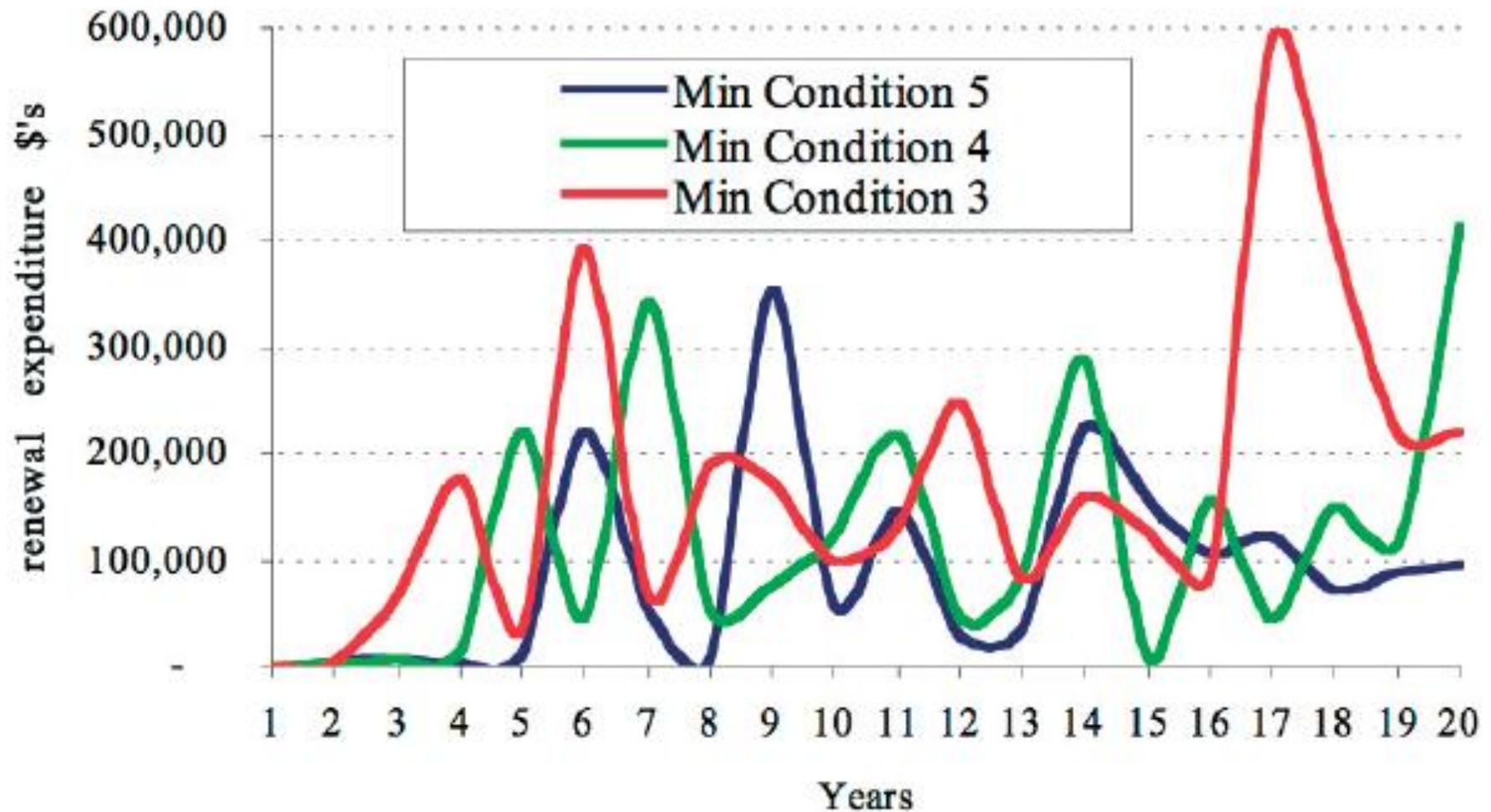
- Consider an increased level of service
- Condition grade is the performance measure
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- Consider an increased level of service
- Set the minimum condition grade to 3 (Moderate)
- Increased replacement frequency
- Increased lifecycle costs

scenario: MCG,  
exp. algorithm: Data Defined





- How about asset performance or function?

Property Type		Level of Service Category	Level of Service Statement
Corporate Property	Back of House	Asset Condition	<ul style="list-style-type: none"> <li>• All assets are to be replaced within two years of their forecast renewal year.</li> <li>• Immediate maintenance requirements shall be addressed within two weeks, except for those with a health and safety risk which shall be dealt with within 2 working days.</li> <li>• All landlord owned assets are replaced within 2 years of their renewal year.</li> </ul>
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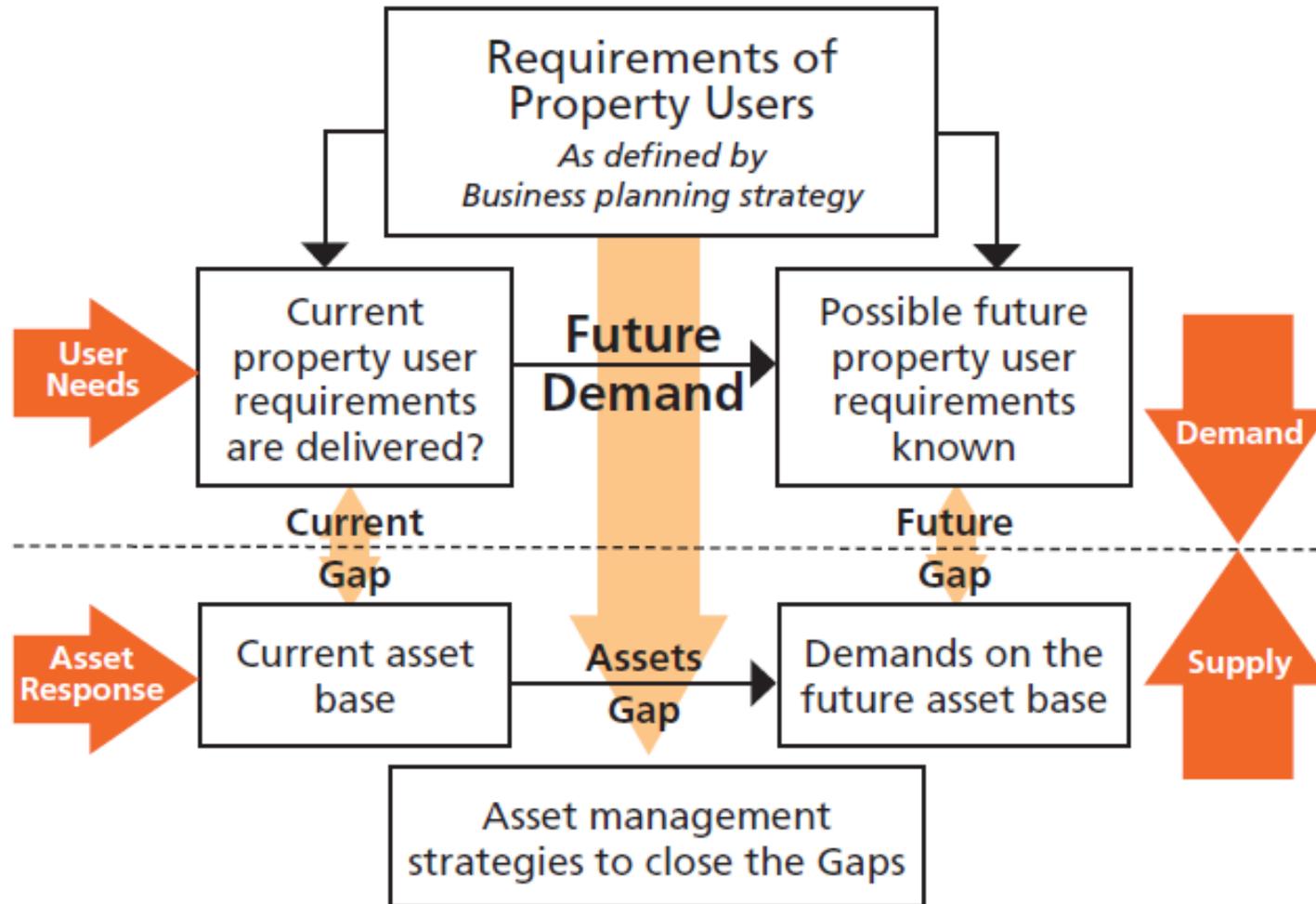


Figure 4.2 Demand vs. Supply model







- When did the performance need change?
- What will the future look like?
- How do you measure performance?
- How does it impact CAM?

Original Bedroom



Modern Bedroom



## Original Kitchen



## Modern Kitchen



- How do you define functionality?
- How do you assess and monitor functionality?
- Should be a strong link to levels of service
- They need to be practical and easy to measure
- Often defined and assessed using surrogates:
  - Temperature range
  - Lighting levels
  - Size numbers and distribution
  - Capacity
  - Amenity

	Hub	Permanent	Non-Permanent
<b>Education &amp; Learning Amenities</b>			
Multi-purpose class rooms			
Library			
Proximal Noho Marae			
Learning Commons			
IT Facilities and Student Labs			
<b>Support &amp; Convenience Amenities</b>			
Café / Dining Facilities			
Administrative Centre			
Car Park Provision			
Public Transport Connection			
Cycle storage facilities			
<b>Safety and Security</b>			
BWOF Compliant Facilities			
H&S Audit Compliant			
Facilities Licensed for Use			
Security Monitoring			
Accessible Facilities			

## First iteration:

- High level and simple
- Provides LoS targets
- Identify LoS gaps
- Identify cost implications
- Identify LoS trade-offs

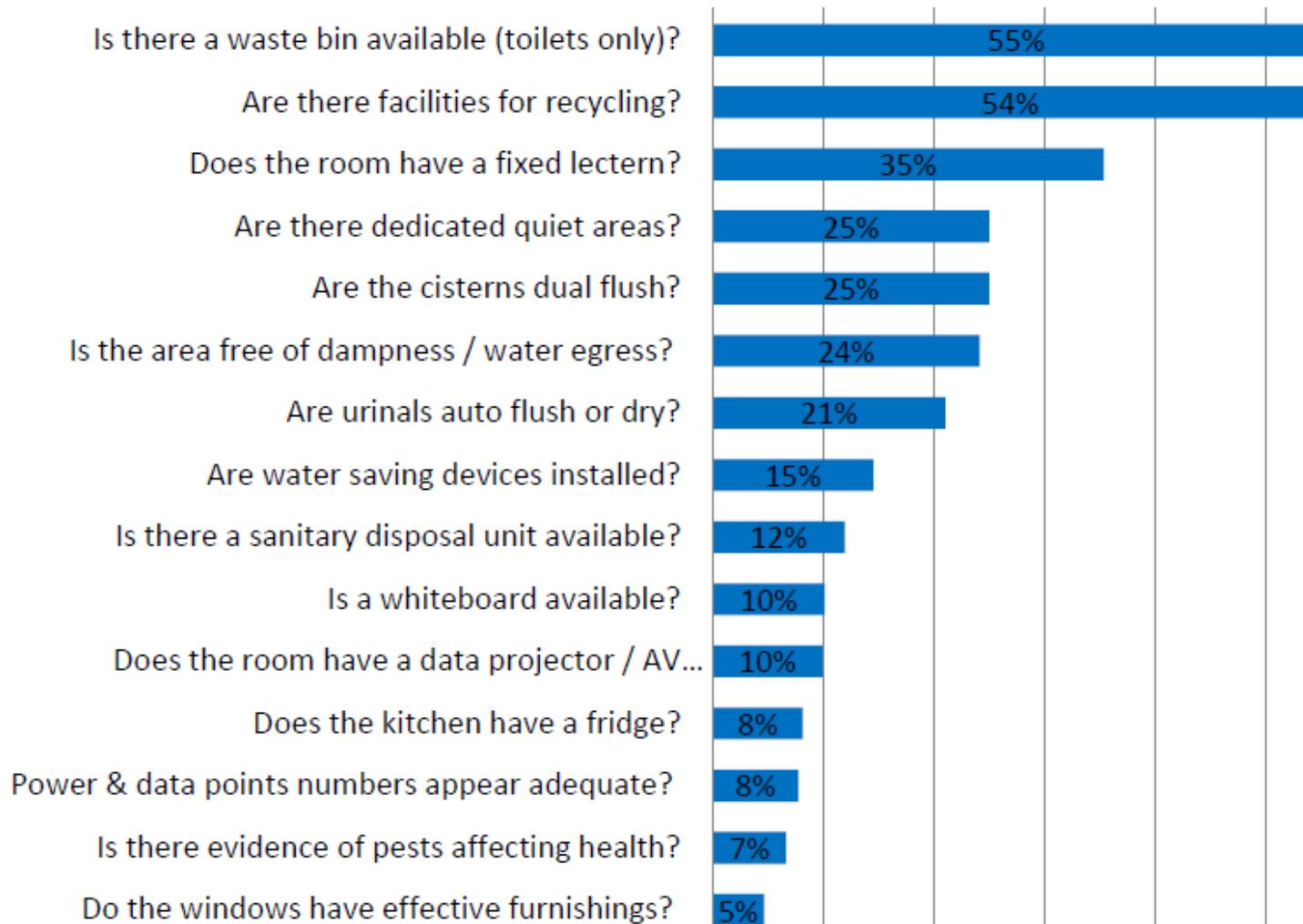
## Next iteration:

- Refining the approach
- Increased granularity

- Measured performance of buildings using:
  - Building Code of Australia (BCA)
  - Disability (Access to Premises – Buildings) Standards
  - AS1428 Design for Access and Mobility

<b>Service Type</b>	<b># failed</b>	<b># passed</b>	<b>year 1</b>	<b>year 2</b>	<b>year 3</b>	<b>Total\$</b>
Clean	110	6,268	5,060	32,400		37,460
Comfortable	159	9,018	50,450	113,000		163,450
Décor	113	6,589		2,000	306,000	308,000
Functional	505	9,890	42,650	405,730	44,500	492,880
Health	9	50	32,600			32,600
Safe	43	2,767	24,500			24,500
Sustainable	161	570		214,200		214,200
<b>Grand Total</b>	<b>1,100</b>	<b>35,152</b>	<b>155,260</b>	<b>767,330</b>	<b>350,500</b>	<b>1,273,090</b>

## % of fails by statements assessed



- Facility Functionality Index (FFI) calculated iaw TEFMA guidelines

**Table 23 – Facility Functionality Index (FFI)**

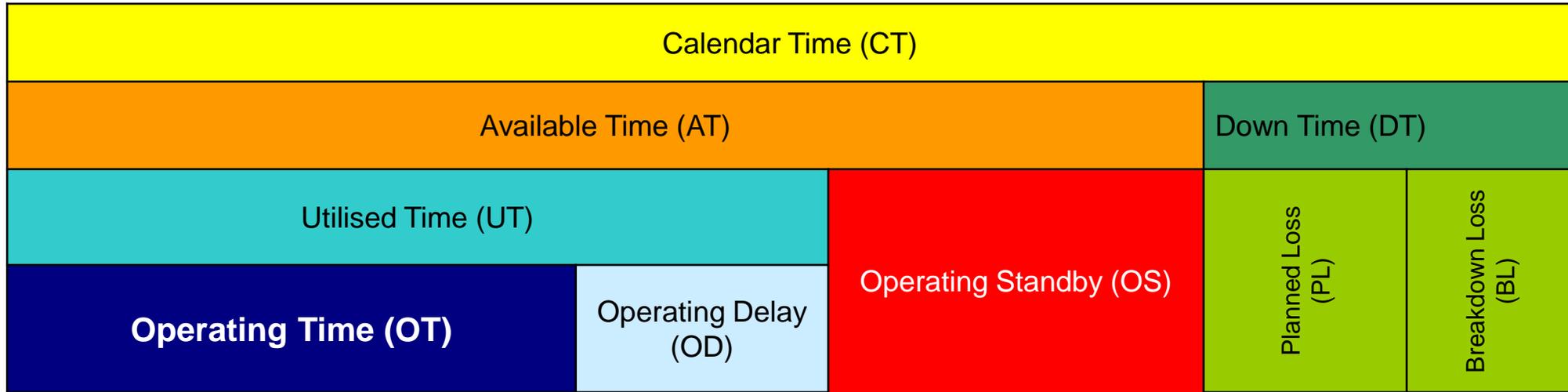
Building #	Compliance		Functionality		Total	FFI
	# Failed	Remedial Cost\$	# Failed	Remedial Cost\$	FFI Cost\$	
Arcscott House	21	1,654,200	40	4,800	1,659,000	0.86
Bimbimbie	0	0	3	3,000	3,000	1.00
Building 1	20	415,450	146	102,920	518,370	0.99
Building 2	19	262,500	30	52,550	315,050	0.97
Building 3	23	400,500	144	240,230	640,730	0.97

## Equipment context, defined by **primary function**

$$\frac{\text{Operating Time (OT)}}{\text{Calendar Time (CT)}} \times 100\% = \frac{\text{hours the asset is in productive use}}{8760 \text{ hours}}$$

defined as

Room context, defined by **primary function**  
(teaching >30 people, office function etc.)



General Definitions:

Calendar Time (CT)	=	Total hours in time period (the calendar year or 8760 hours, excluding leap-years)
Available Time (AT)	=	Total hours room is available for use
Down Time (DT)	=	Hours the room is not available for use
Planned Loss (PL)	=	Hours the room is scheduled for maintenance downtime
Breakdown Loss (BL)	=	Hours the room is scheduled to use but is unavailable due to breakdown
Operating Standby (OS)	=	Hours the room is available for use but not being utilised
Utilised Time (UT)	=	Total hours room is booked and available to use
Operating Time (OT)	=	Hours room is used for its primary function
Operating Delay (OD)	=	Hours room is used but not productively

(Source: Rio Tinto:  
Time Definitions and KPIs for  
Mobile Equipment)

Rio Tinto, one of the worlds biggest miners, enforced this utilisation model.

Business analysts attributed improvement in truck performance = 8%

Over a fleet of 656 haul trucks = \$131 million per annum (or 48 trucks).

8% potentially is 1 less room per 12, 1 less building per 12.

Applying this to space can only be successful if:

- the expectation of room utilisation % is understood (15% not 90%)
- Standards are consistently applied
- Differences are contextualised
- It is used as a point for internal improvement not a stick or league table.

- LoS is a key component of effective CAM
- LoS need to be defined and measured
- Performance measures need to be meaningful
- Measurement needs to be simple and repeatable
- Identify the current level of provision
- Forecast future demand and service levels
- Develop strategies to deal with gaps

- Questions?