

ArdenACCESS

Creating Intelligent Buildings

Enterprise Building Automation System

October 22, 2009



Arden realty, inc.

Project Vision, Goal & Objectives

Vision

Establish a unique enterprise building automation platform that will distinguish Arden as the unquestioned sustainability leader amongst property services companies.

Project Goal

To provide Arden a platform to manage and operate buildings more efficiently and economically.

Project Objectives

The objectives of the Enterprise Building Automation System (BAS) platform are to:

- Collect property level data from existing Building Automation Systems.
- Perform centralized monitoring, reporting and analysis.
- Execute diagnostics and provide alarming/notification.
- Issue commands for afterhours A/C or demand response.
- Allow for remote access and control of the existing Building Automation Systems.
- Enable rapid, portfolio-wide retro-commissioning program.

Intelligent Buildings

An intelligent building uses automation and integration to reach the perfect balance between superior indoor environment and minimizing energy usage and operational labor.

Why Integrated BAS?

- Create Intelligent Buildings
- Sustainable operations
- Real time data
 - Speeds variance reporting
 - Provides immediate verification of whether an operational change is successful
 - Reduced operating costs
- Control “drift”
- Process efficiency
 - Total of more than 2,500 man-hrs eliminated
 - As portfolio grows, this statistic will escalate
- Platform for growth and innovation

What is “Drift”?

- “In telecommunication, a **drift** is a comparatively long-term change in an attribute, value, or operational parameter of a system or equipment.”

- (Wikipedia.org)

- For our purposes, “**drift**” can be considered to be an increase in energy consumption from the optimal building operation due to staff changes, loss of focus and lack of accountability.

Building 1

Electric Utility Provider

Southern California Edison

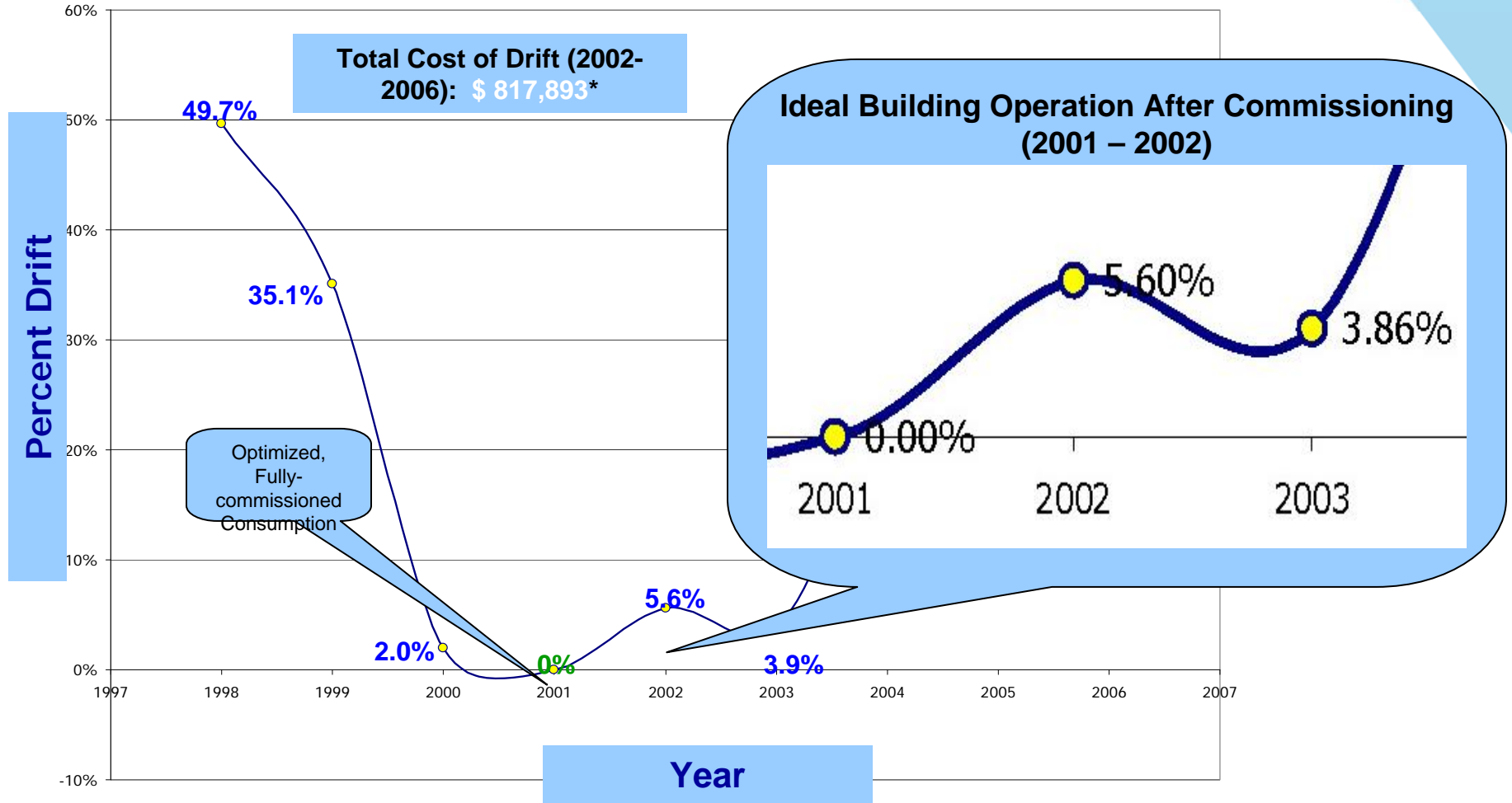
2006 Energy Consumption Facts

- kWh Usage: 8,227,958
- Billing Amount: \$ 1,116,158
- \$ / kWh: \$ 0.136
- kWh / Sq. Ft.: 19.7
- \$ / Sq. Ft.: \$ 3.02
- Square Footage: 417,285

Building 1

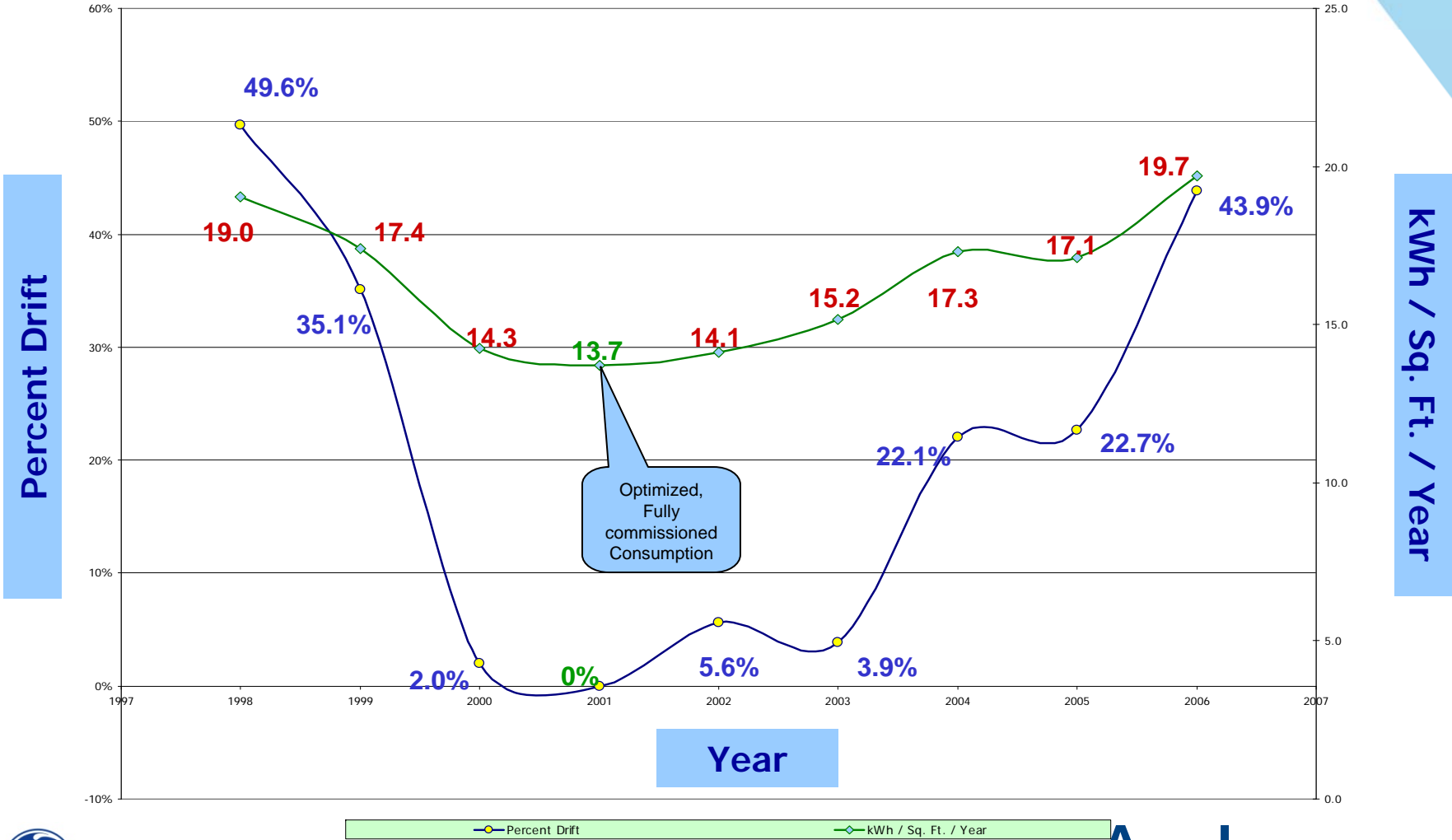
Percent (%) Drift

Figures based on kWh Consumption & Operating Performance



Building 1

Percent Drift vs. kWh / Sq. Ft. / Year

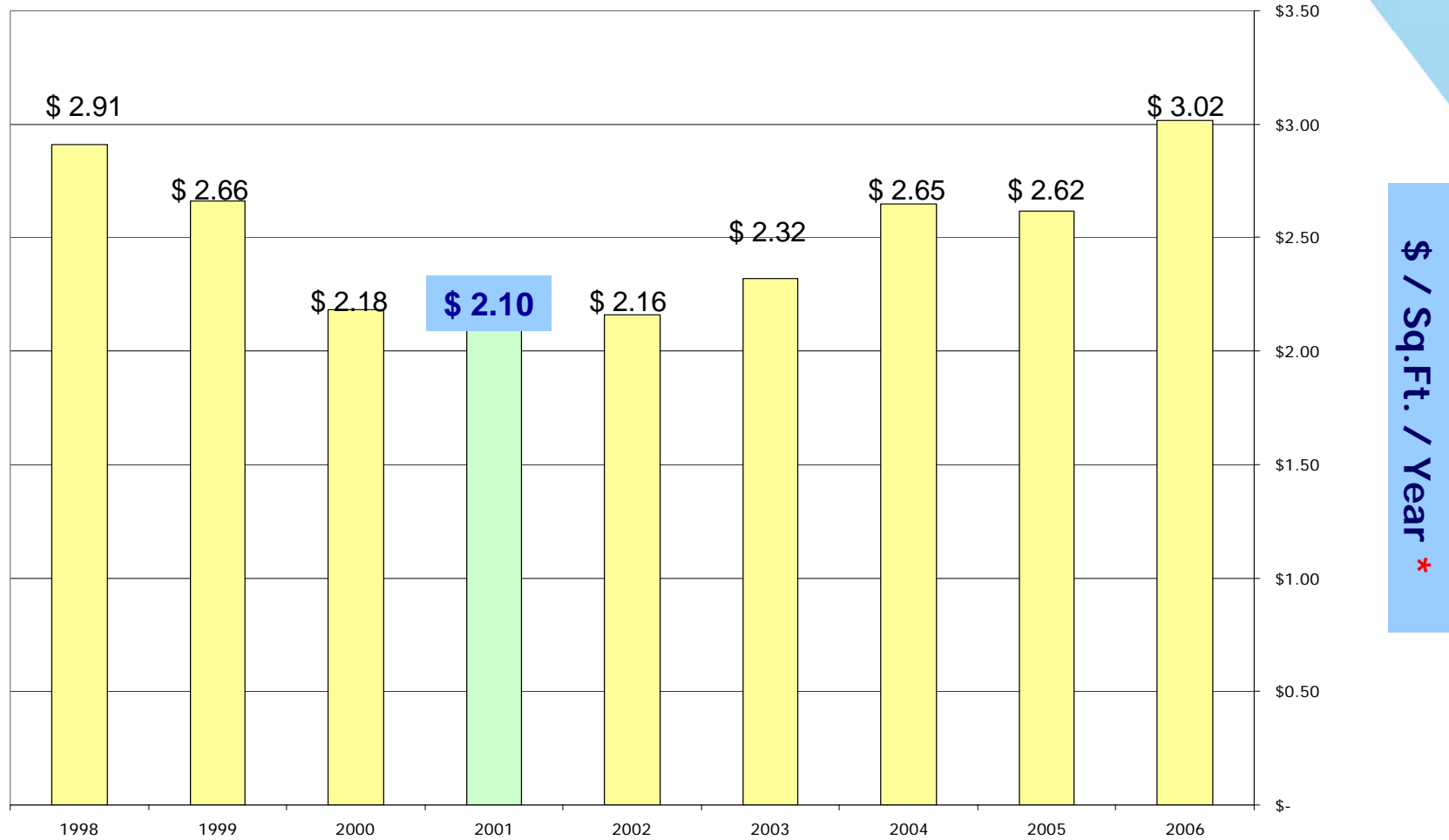


Figures based on kWh Consumption & Operating Performance

Arden realty,

Building 1

\$ / Sq. Ft. / Year



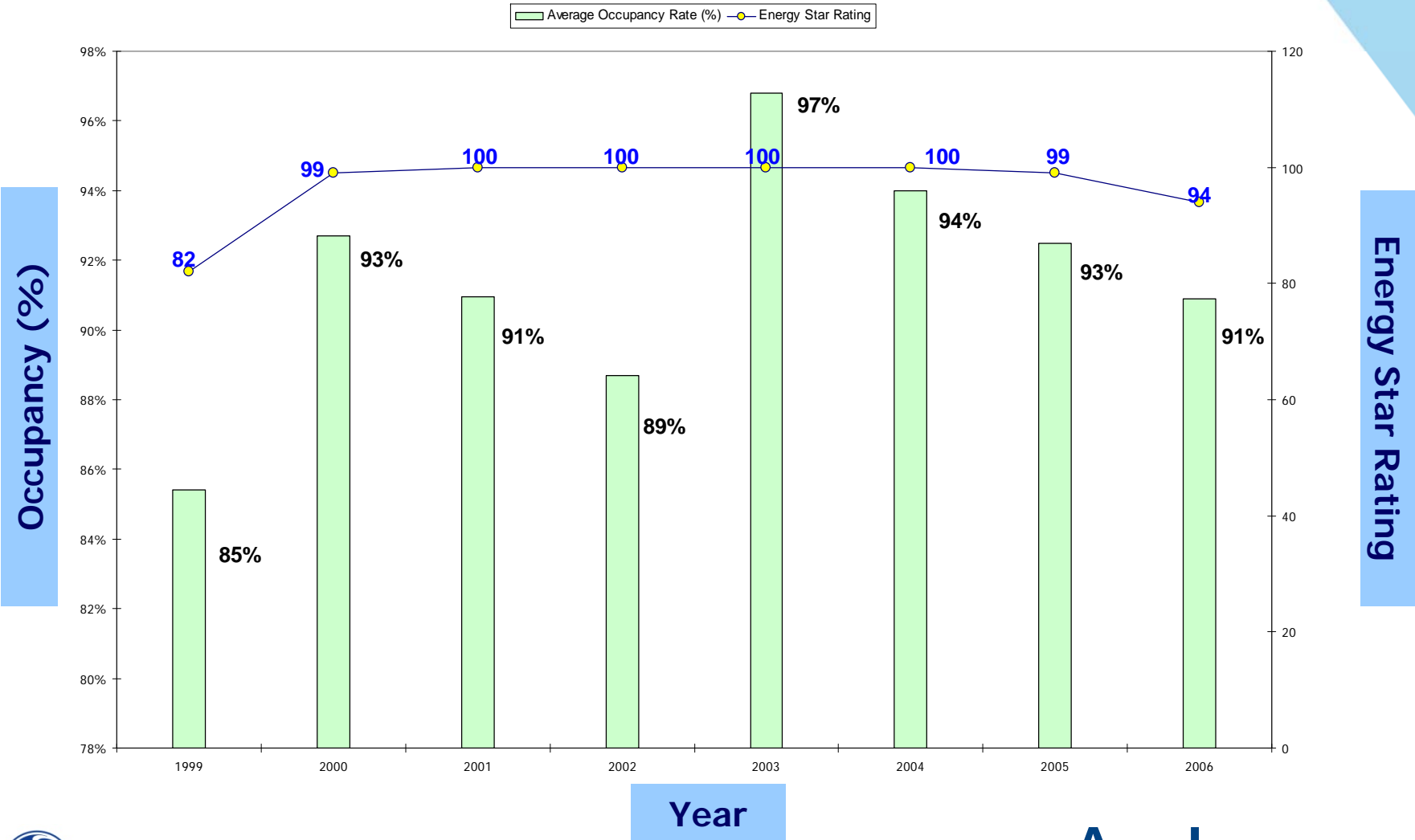
Year

* Figure Normalized to 2001 SCE Utility Rate

Arden realty,

Building 1

Energy Star Rating vs. Occupancy Rate



Building 2

Electric Utility Provider

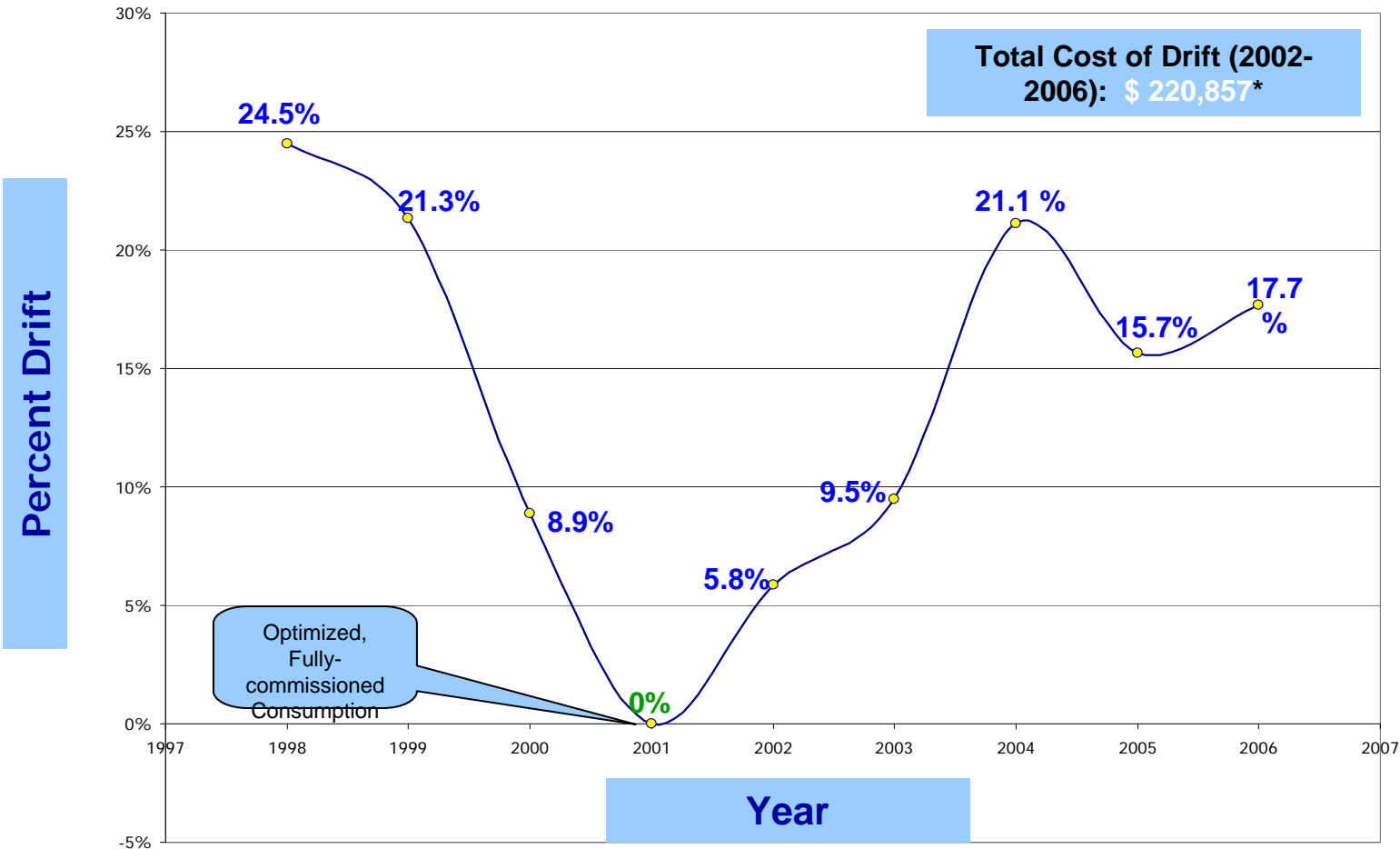
Los Angeles Department of Water & Power

2006 Energy Consumption Facts

- kWh Usage: 3,095,486
- Billing Amount: \$ 380,949
- \$ / kWh: \$ 0.123
- kWh / Sq. Ft.: 18.7
- \$ / Sq. Ft.: \$ 2.10
- Square Footage: 174,718

Building 2

Percent (%) Drift



*Figure Normalized to 2001 Utility Rate

Figures based on kWh Consumption & Operating Performance

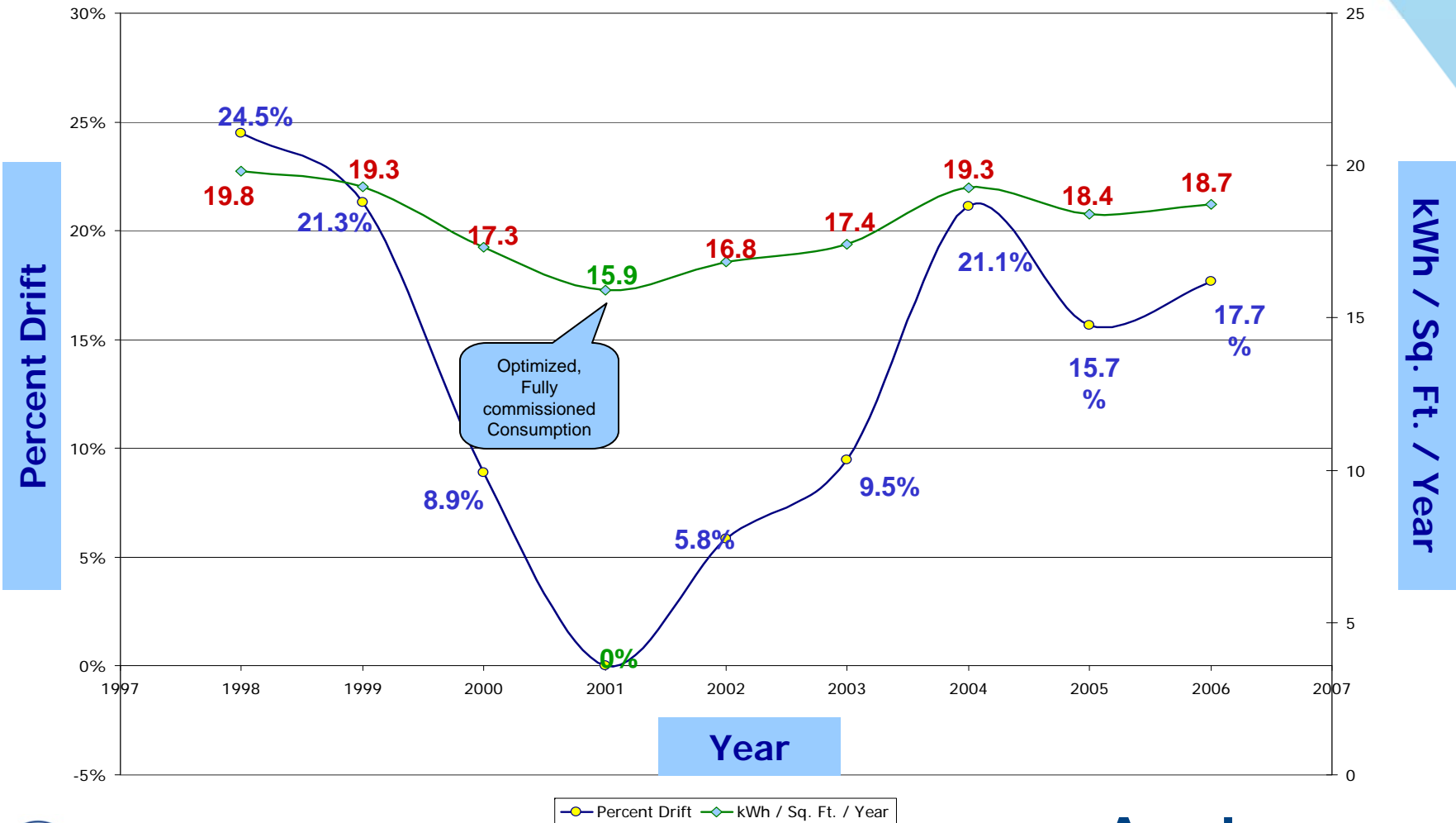


imagination at work

Arden realty,

Building 2

Percent Drift vs. kWh / Sq. Ft. / Year

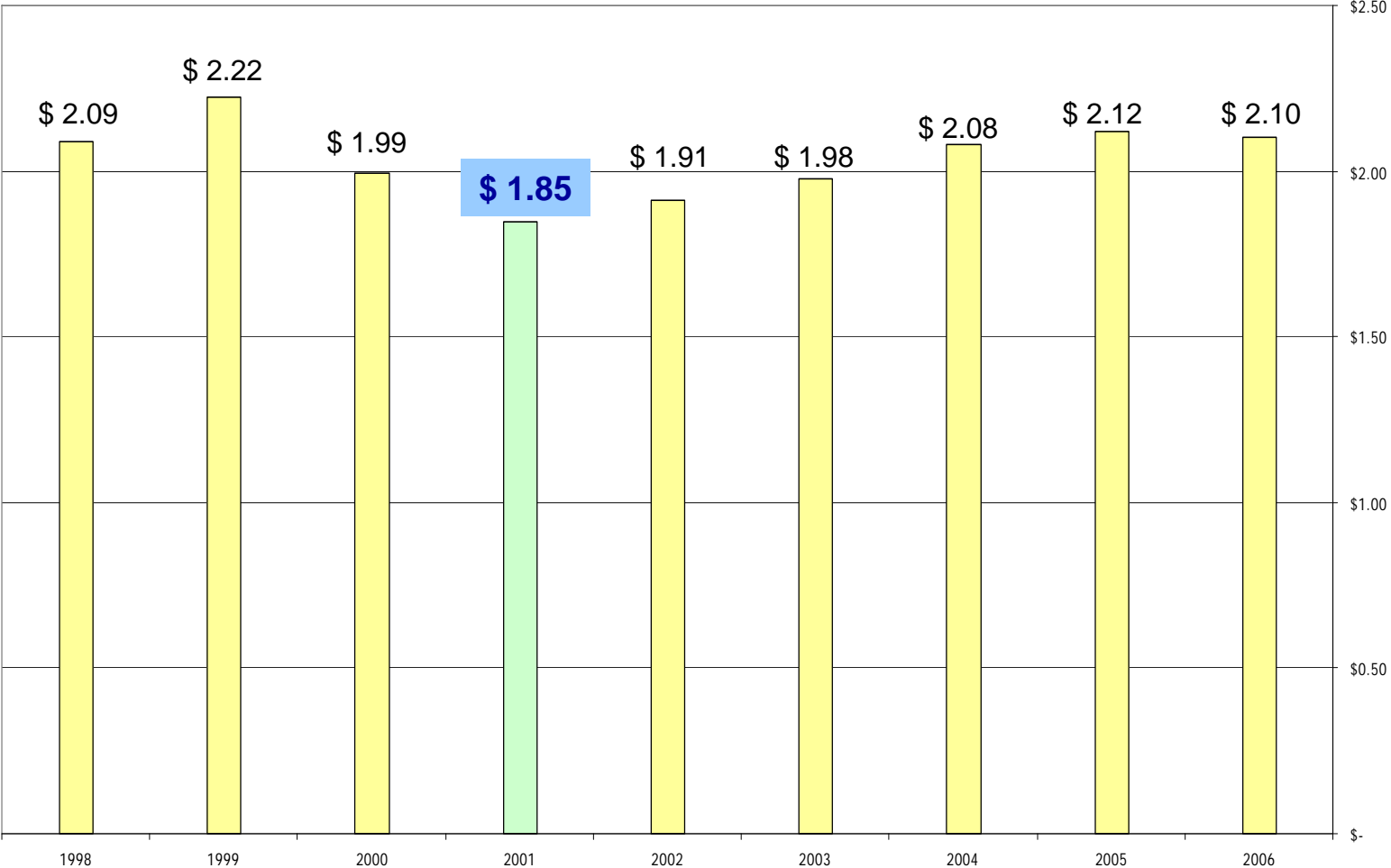


imagination at work***Figures based on kWh Consumption & Operating Performance**

Arden realty,

Building 2

\$ / Sq. Ft. / Year



\$ / Sq.Ft. / Year *



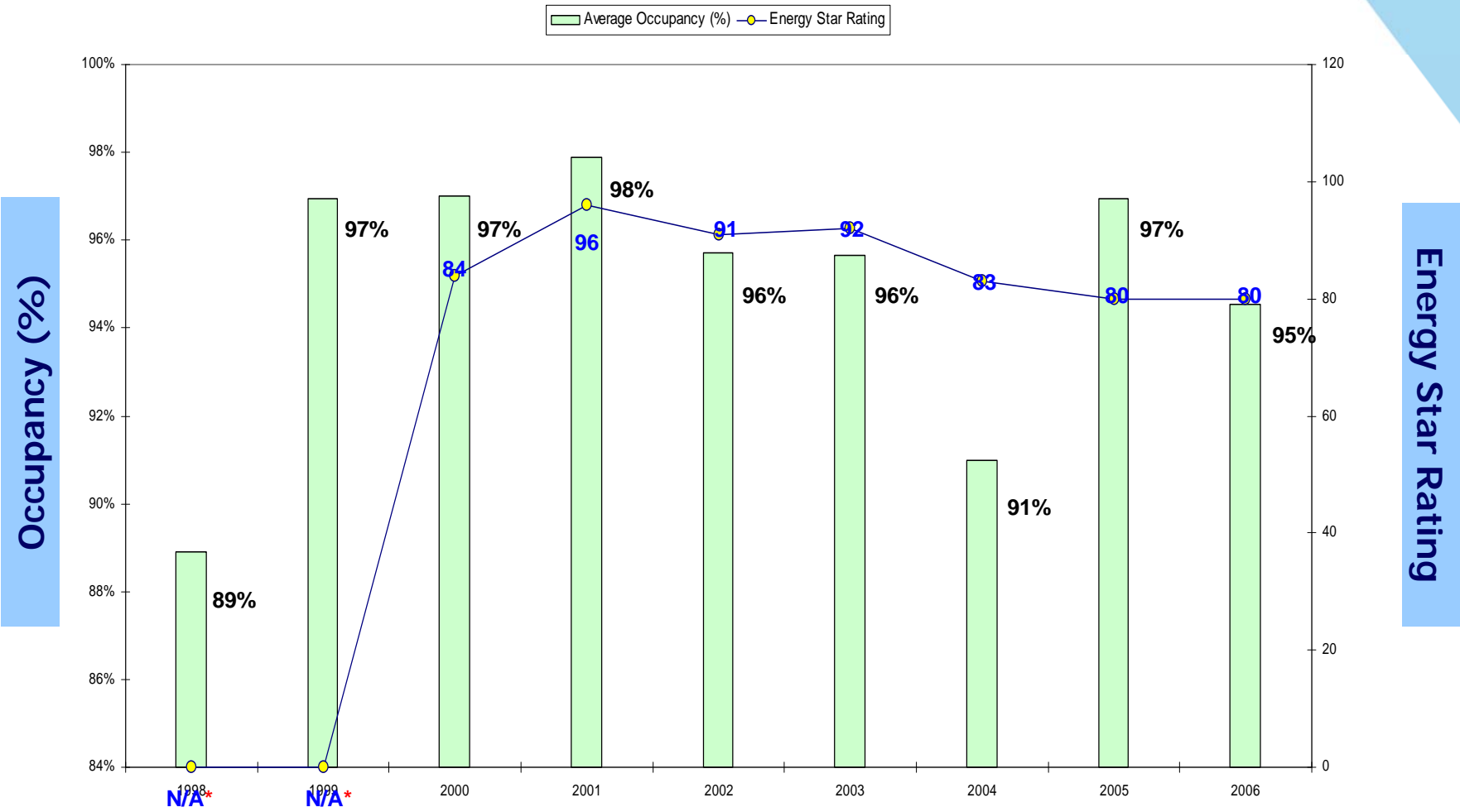
Year

* Figure Normalized to 2001 Average Rate

Arden realty,

Building 2

Energy Star Rating vs. Occupancy Rate



Year

*Did not apply for Energy Star Label (1998 & 1999)

Arden realty,

Building 3

Electric Utility Provider

Burbank Water & Power

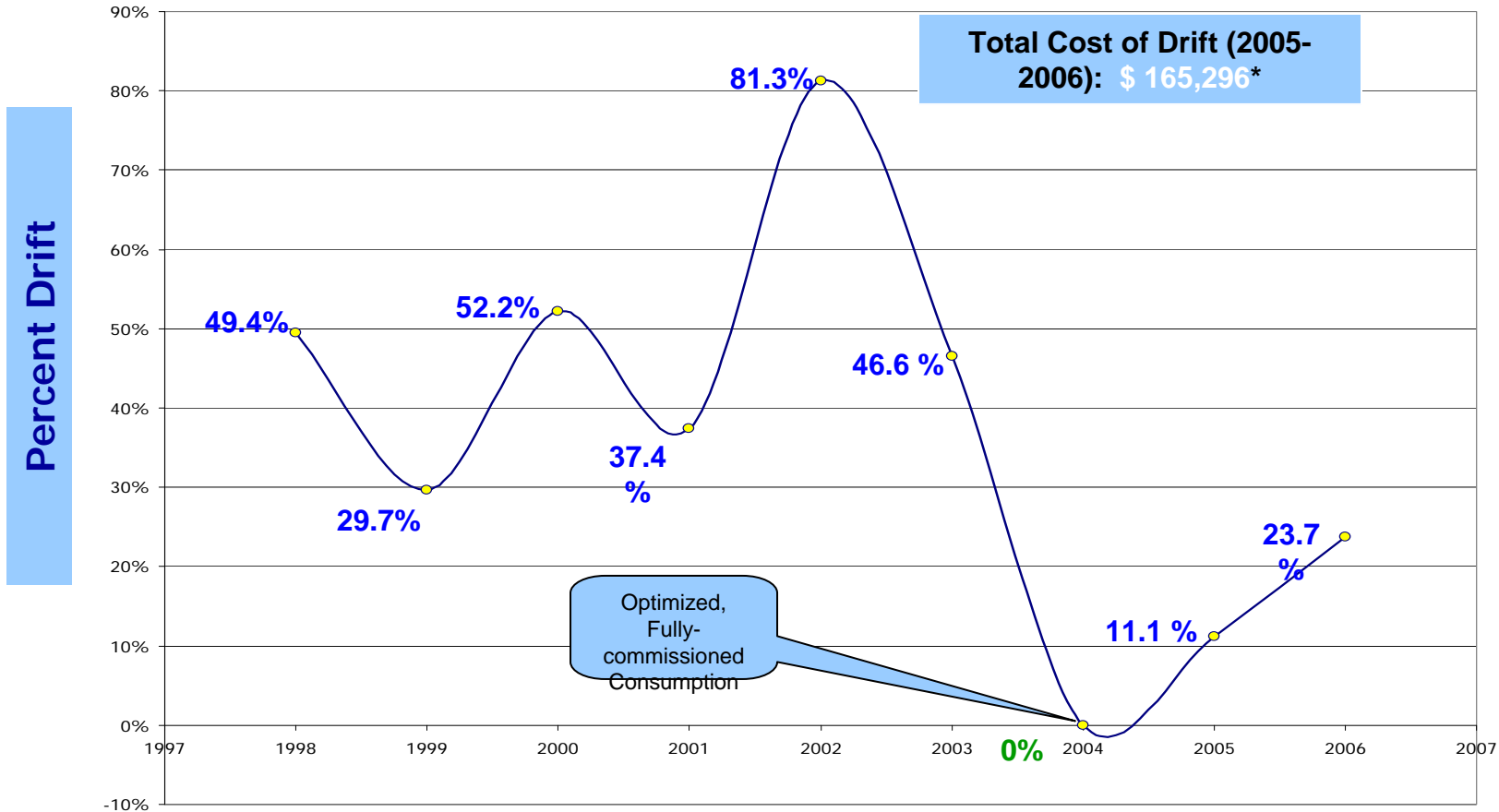
2006 Energy Consumption Facts

- kWh Usage: 3,628,789
- Billing Amount: \$ 569,514
- \$ / kWh: \$ 0.157
- kWh / Sq. Ft.: 20.8
- \$ / Sq. Ft.: \$ 3.38
- Square Footage: 176,668

Building 3

Percent (%) Drift

Figures based on kWh Consumption & Operating Performance



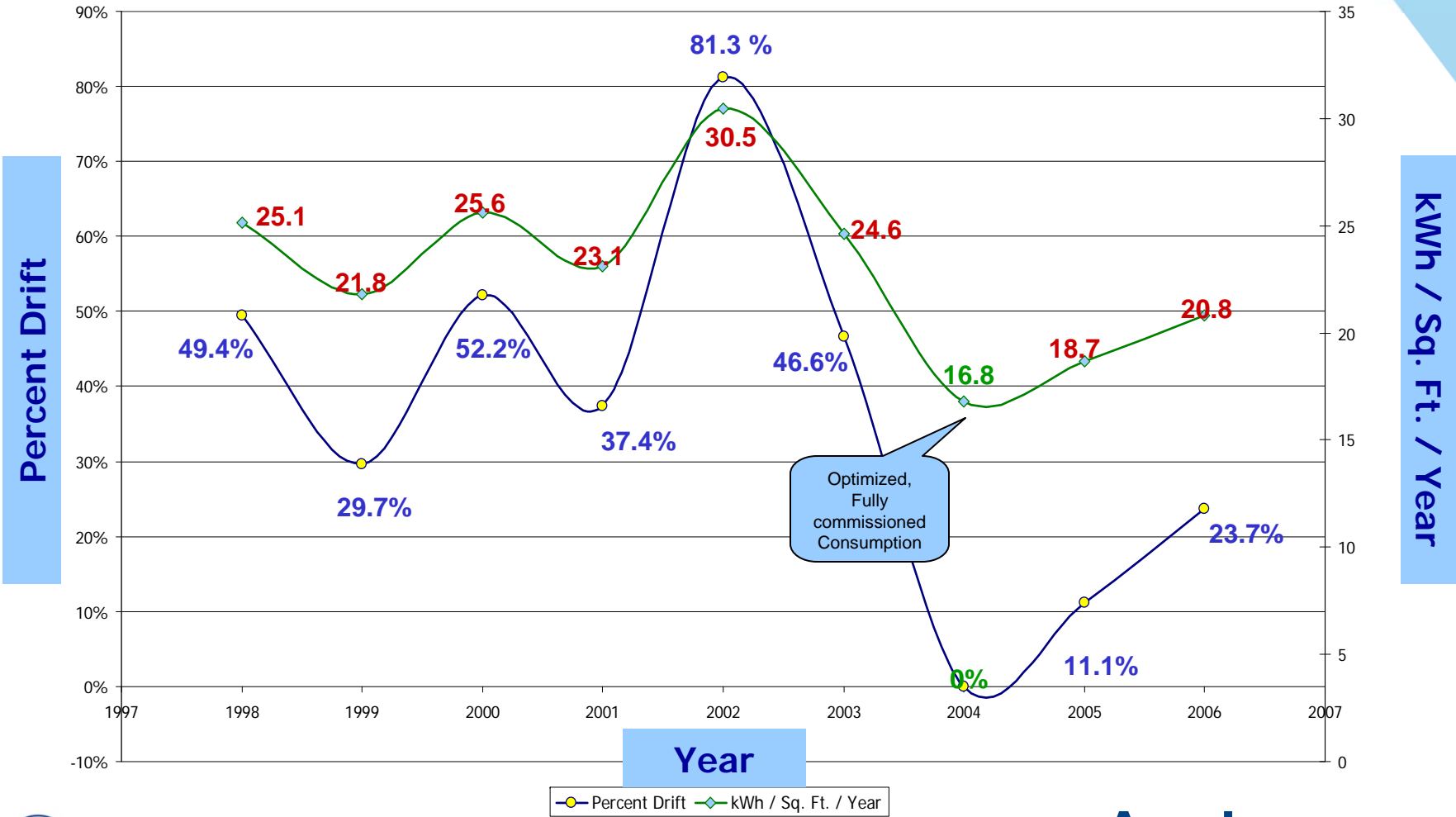
Year

*Utilizes Average Utility Rate for 2004

Arden realty,

Building 3

Percent Drift vs. kWh / Sq. Ft. / Year

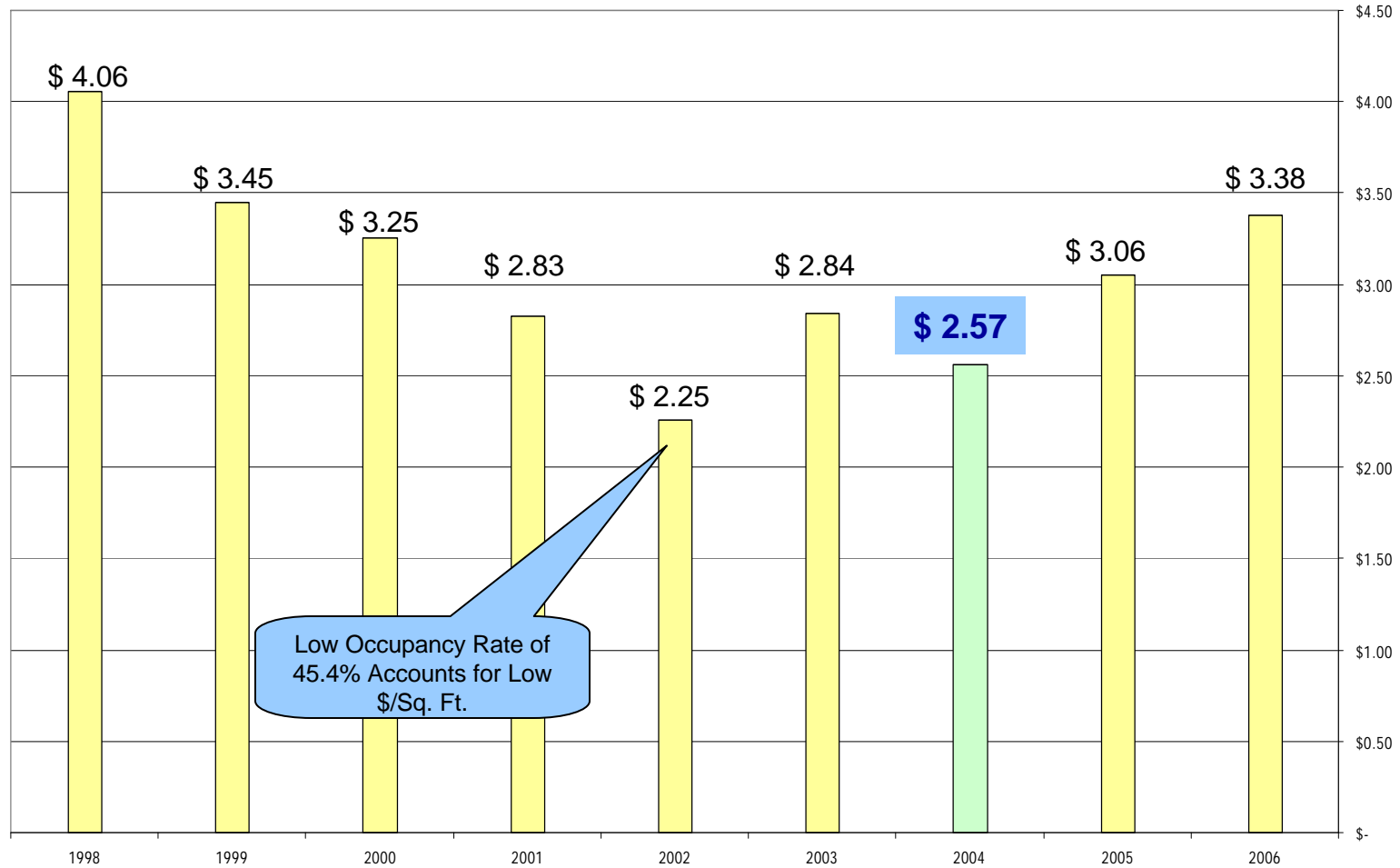


imagination at work ***Figures based on kWh Consumption & Operating Performance***

Arden realty,

Building 3

\$ / Sq. Ft. / Year

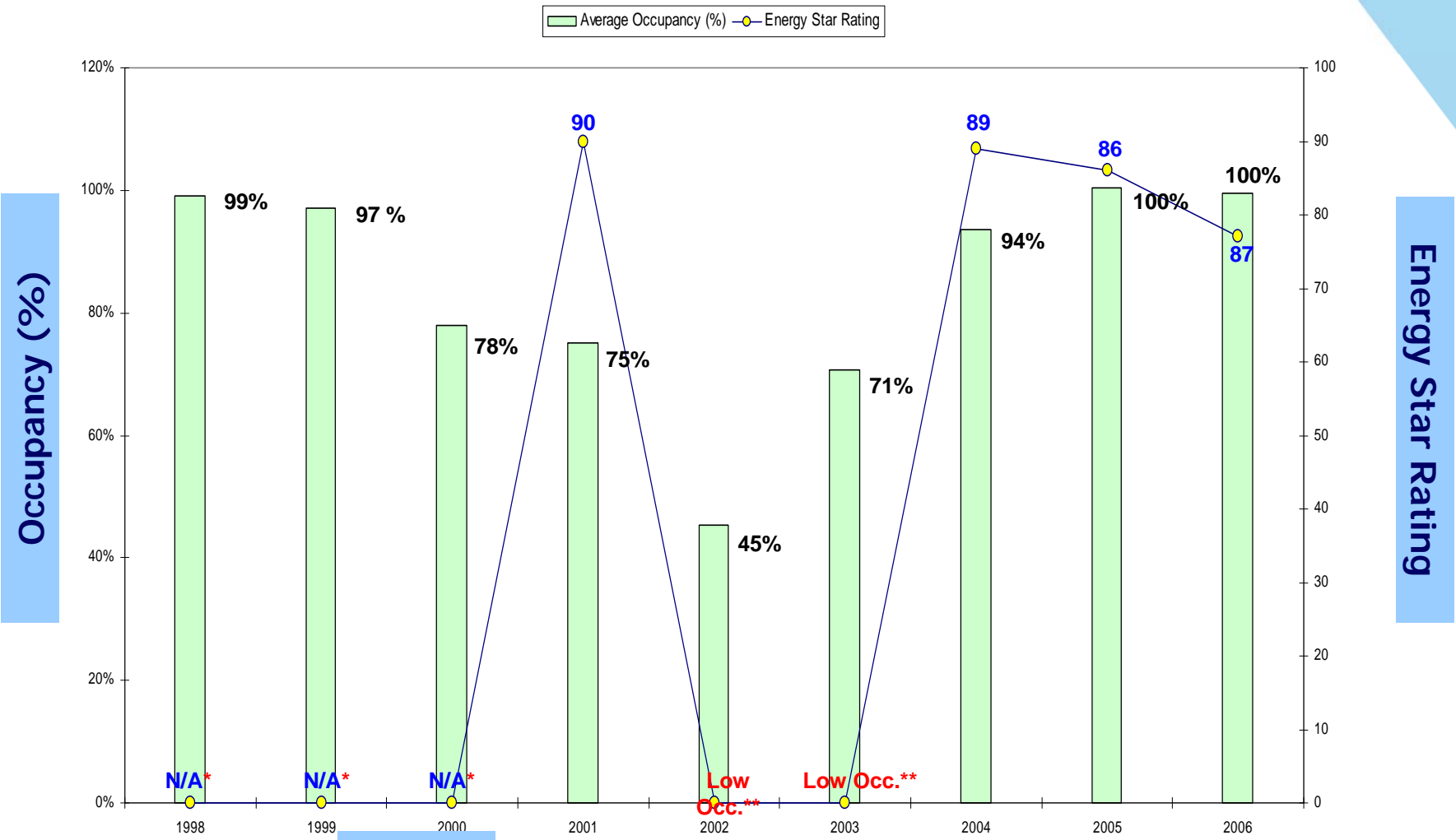


Low Occupancy Rate of 45.4% Accounts for Low \$/Sq. Ft.

\$ / Sq.Ft. / Year *

Building 3

Energy Star Rating vs. Occupancy Rate



Year

*Did not apply for Energy Star Label (1999 - 2000)
 ** Occupancy must be 75% or Higher to Qualify for Energy Star Benchmark

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Building 4

Electric Utility Provider

Southern California Edison

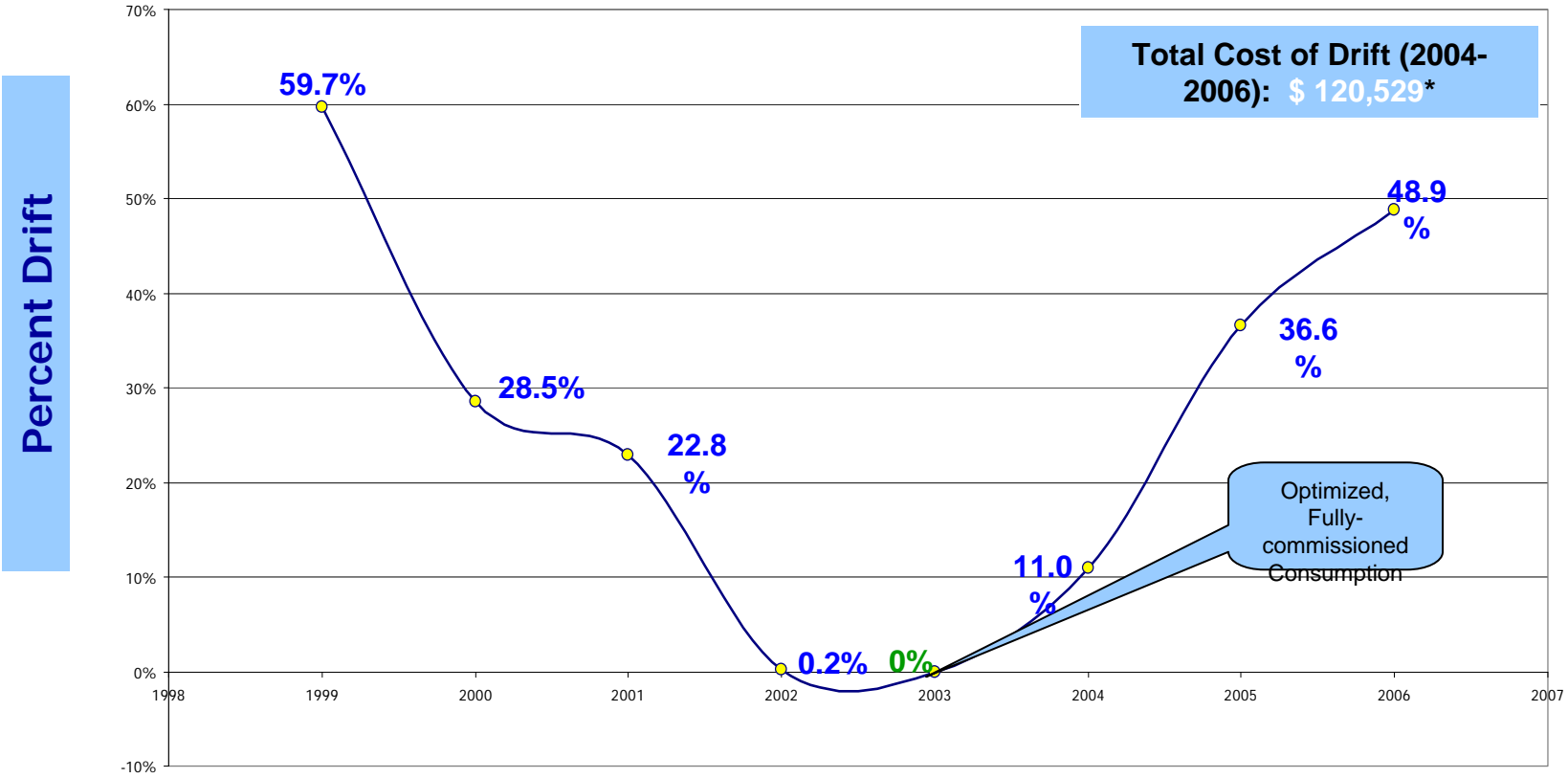
2006 Energy Consumption Facts

- kWh Usage: 1,552,320
- Billing Amount: \$ 202,833
- \$ / kWh: \$ 0.162
- kWh / Sq. Ft.: 17.2
- \$ / Sq. Ft.: \$ 2.65
- Square Footage: 72,113

Building 4

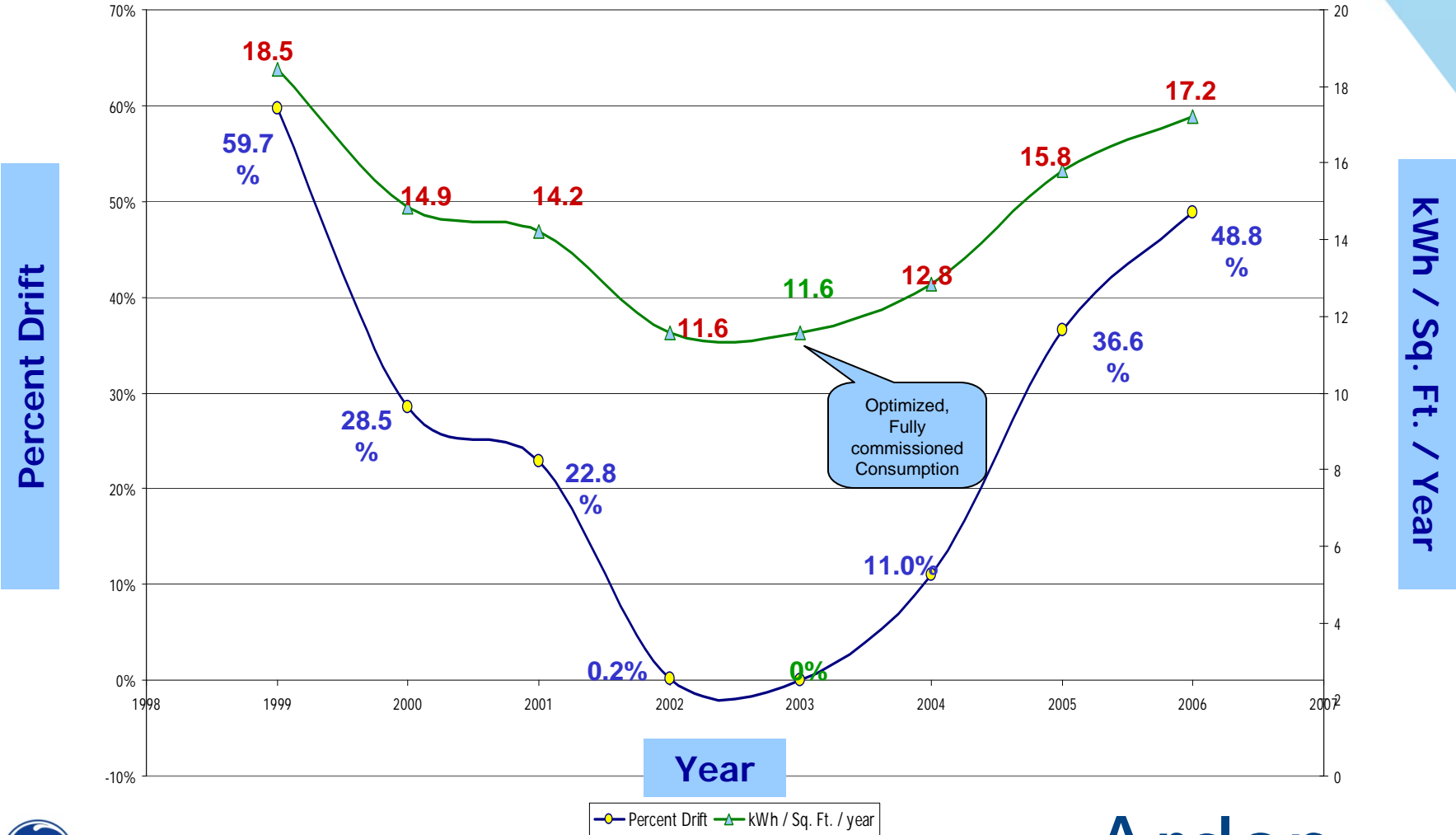
Percent Drift

Figures based on kWh Consumption & Operating Performance



Building 4

Percent Drift vs. kWh/Sq. Ft./Year



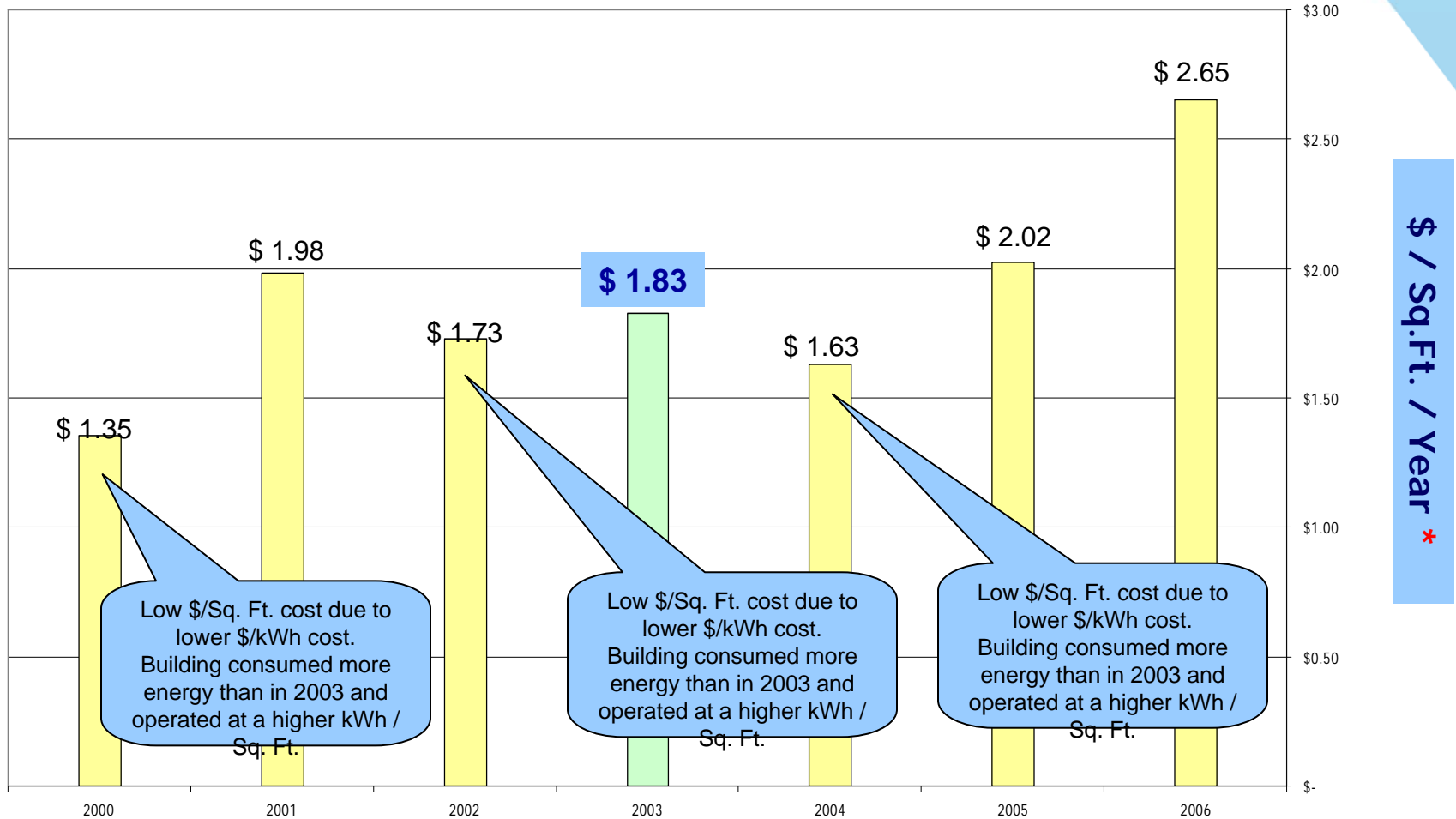
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Figures based on kWh consumption & Operating Performance

Arden realty,

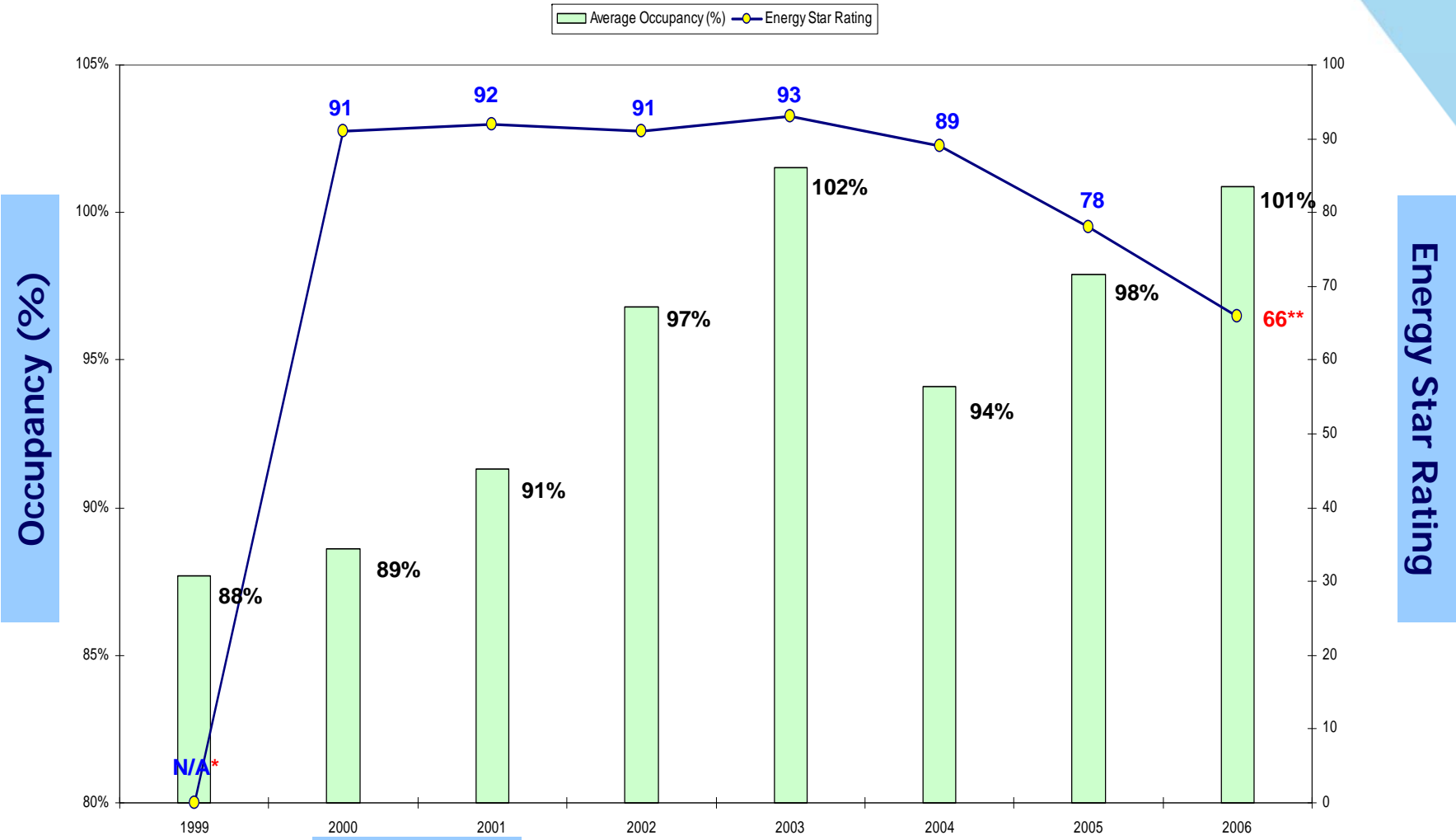
Building 4

\$ / Sq. Ft. / Year



Building 4

Energy Star Rating vs. Occupancy Rate



Year

*Did not apply for Energy Star Label (1999)

**Did not qualify for Energy Star Label – Minimum Score of 75 Required

Arden realty,

Building 5

Electric Utility Provider

Southern California Edison

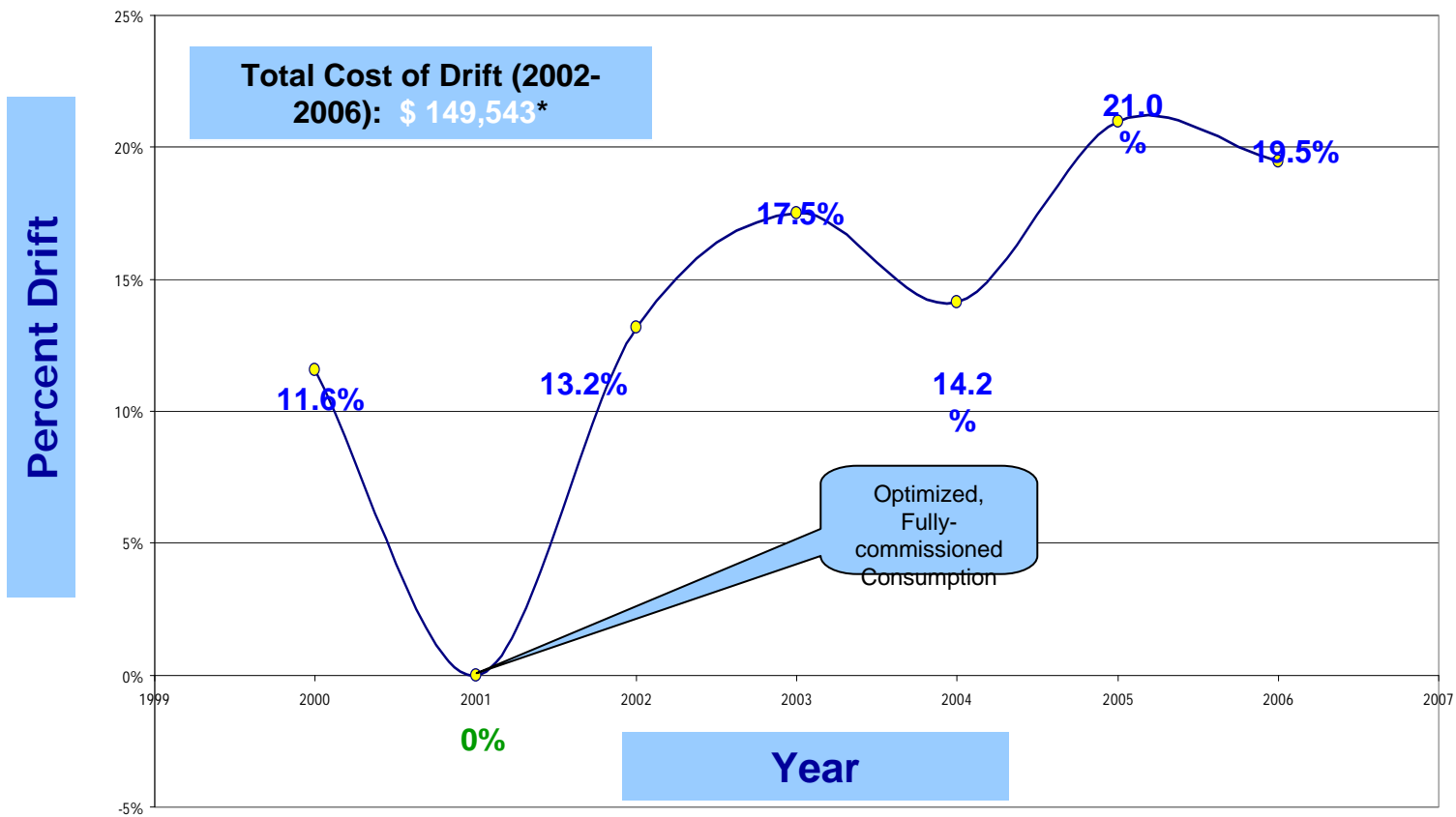
2006 Energy Consumption Facts

- kWh Usage: 1,446,858
- Billing Amount: \$ 240,948
- \$ / kWh: \$ 0.167
- kWh / Sq. Ft.: 16.9
- \$ / Sq. Ft.: \$ 2.53
- Square Footage: 87,647

Building 5

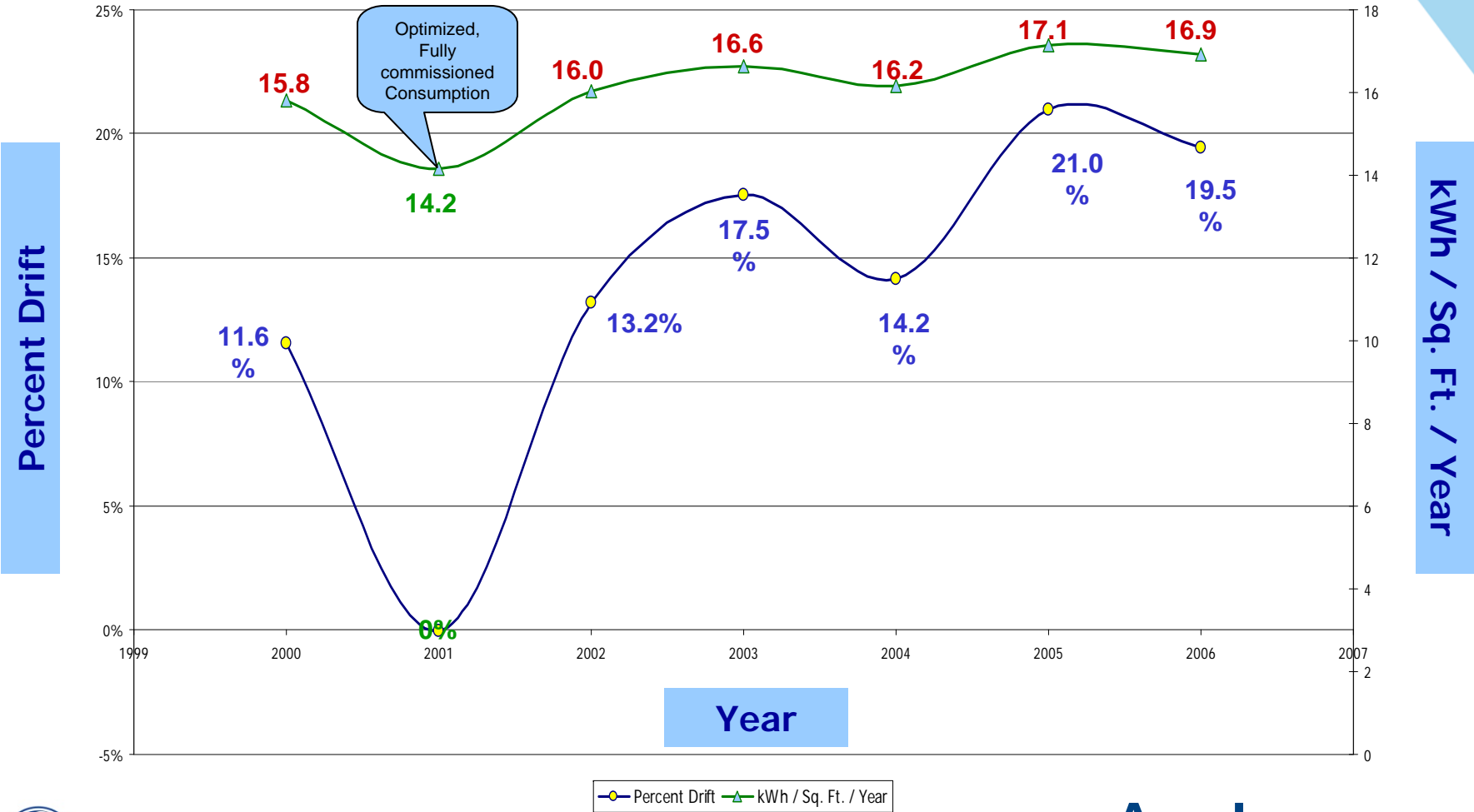
Percent (%) Drift

Figures based on kWh Consumption & Operating Performance



Building 5

Percent Drift vs. kWh / Sq. Ft. / Year



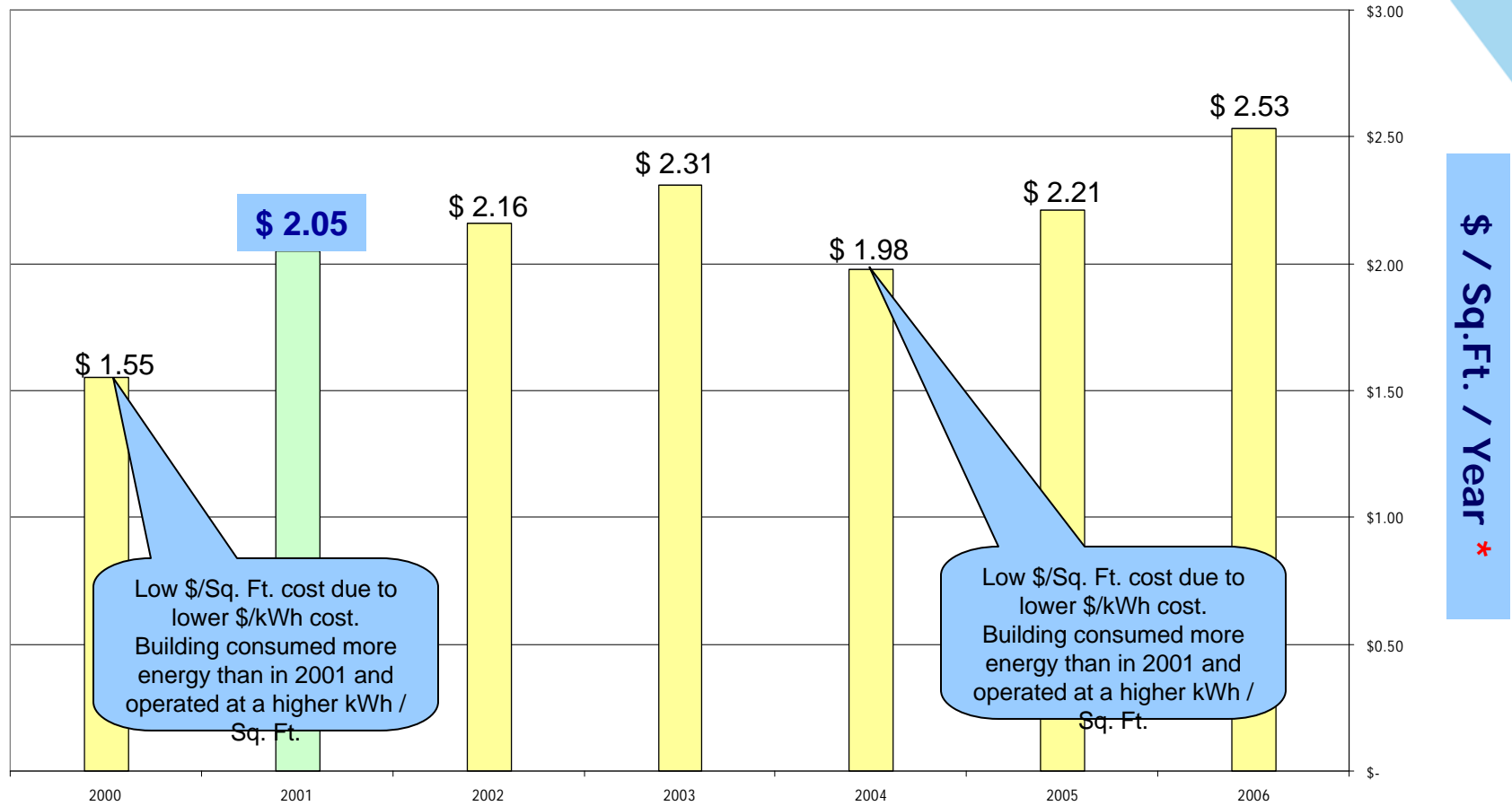
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*** Figures based on kWh consumption & Operating Performance ***

Arden realty,

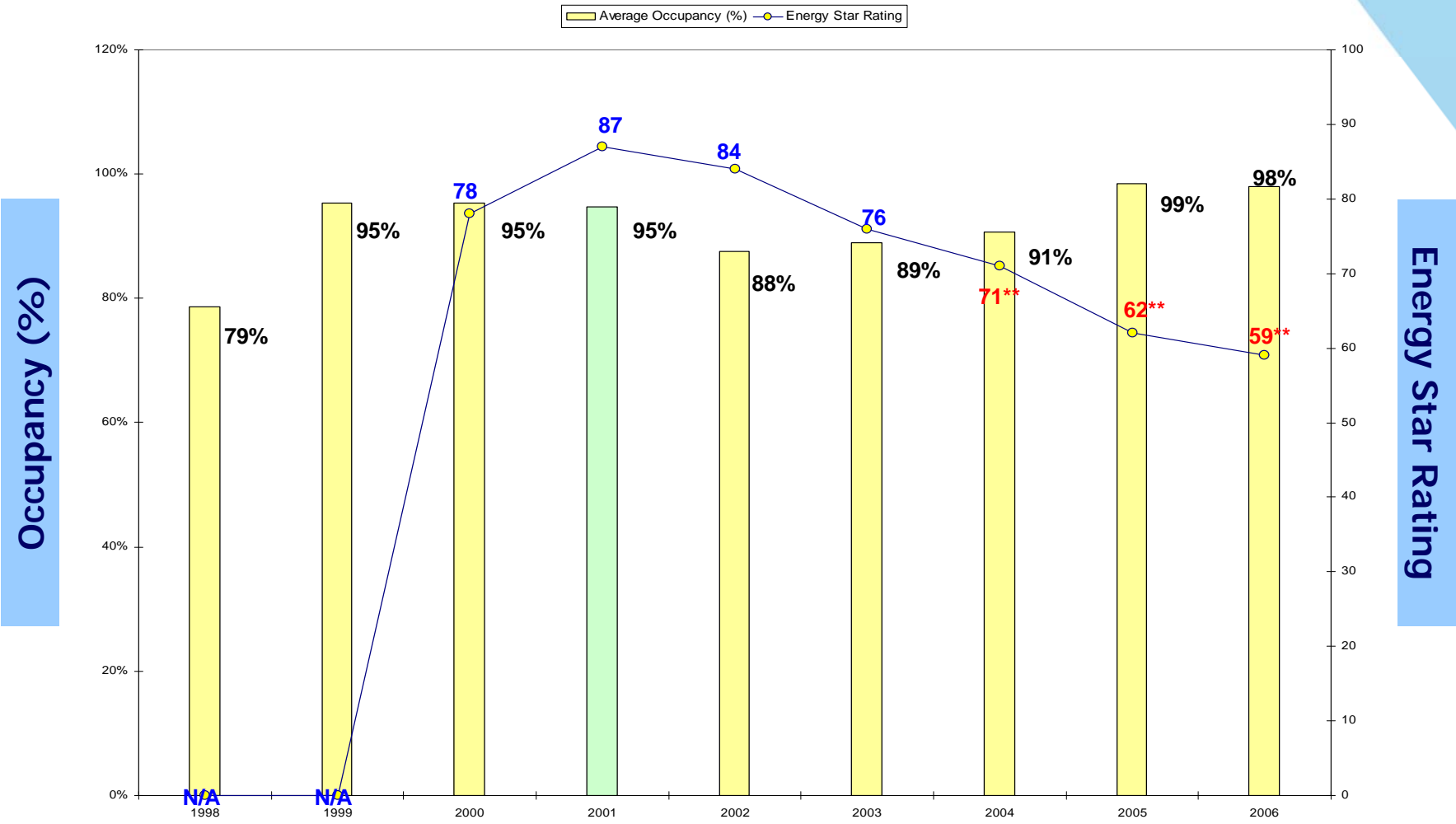
Building 5

\$ / Sq. Ft. / Year



Building 5

Energy Star Rating vs. Occupancy Rate



Year

*Did not apply for Energy Star Label (1998 & 1999)
 **Did not qualify for Energy Star Label – Minimum Score of 75 Required

Arden realty,

Avoided Drift			
EXAMPLE FACILITIES			
Facility	\$ / SF / Yr Min	\$ / SF / Yr Max	Difference
Building 1	\$ 2.10	\$ 3.02	\$ 0.92
Building 2	\$ 1.85	\$ 2.12	\$ 0.27
Building 3	\$ 2.57	\$ 3.38	\$ 0.81
Building 4	\$ 1.83	\$ 2.65	\$ 0.82
Building 5	\$ 2.05	\$ 2.53	\$ 0.48
	Average Difference:		\$ 0.66

Square Feet:	6,000,000
Use \$.30 per s.f. (conservative):	X \$0.30
Total projected annual savings:	\$ 1,800,000.00

Introducing

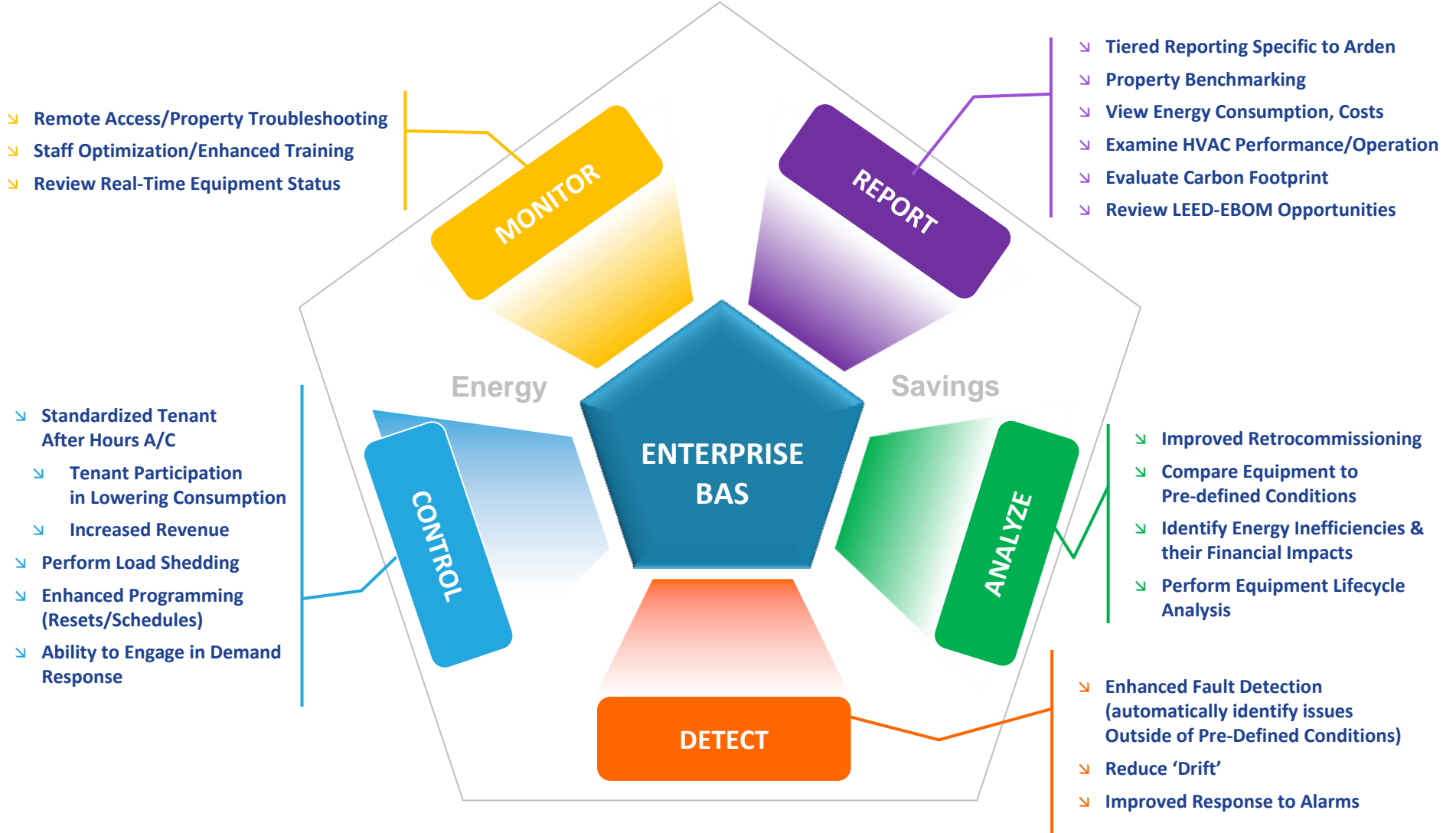
Arden Access



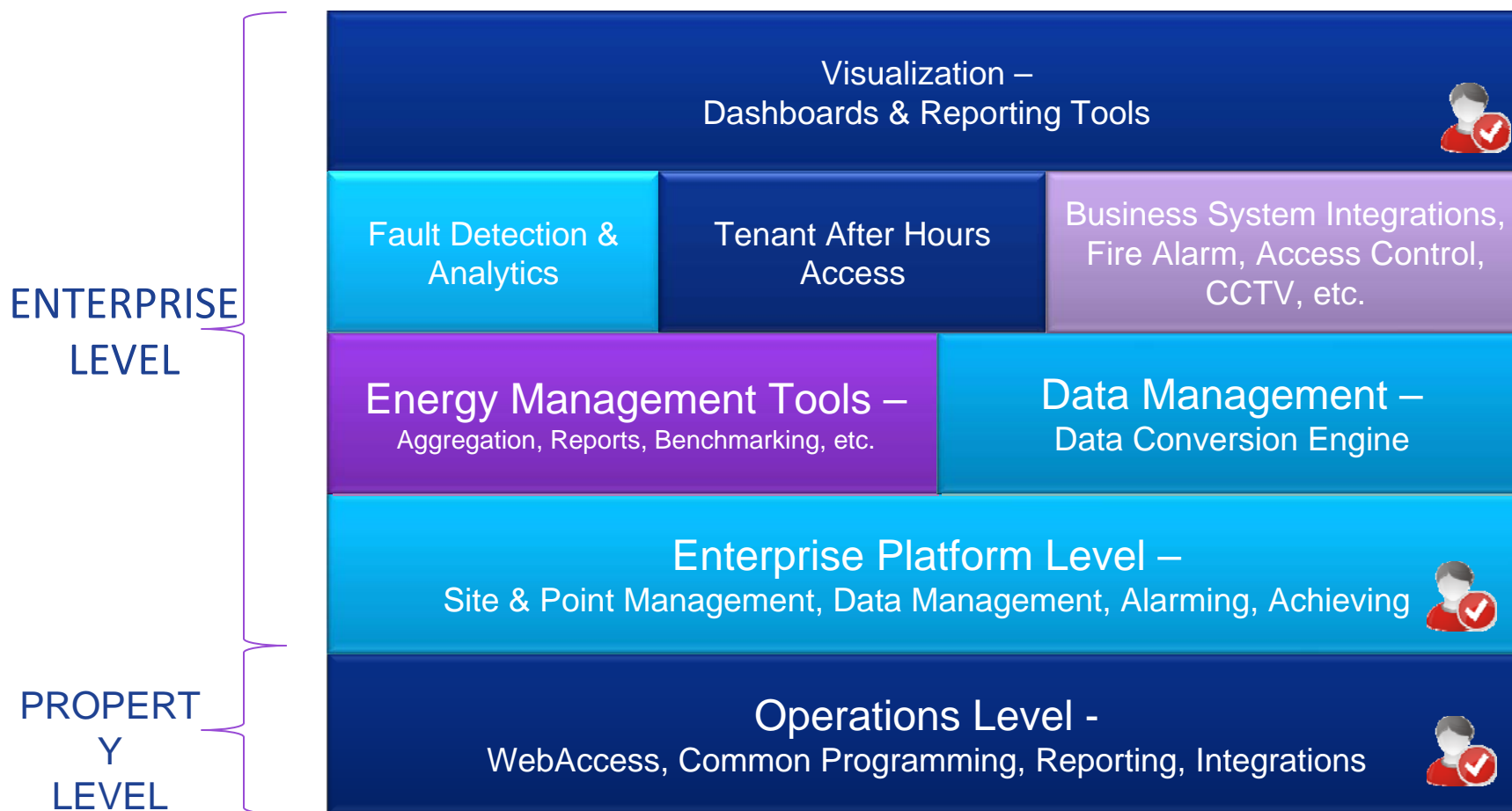
Arden realty, inc.

Enterprise BAS Offerings

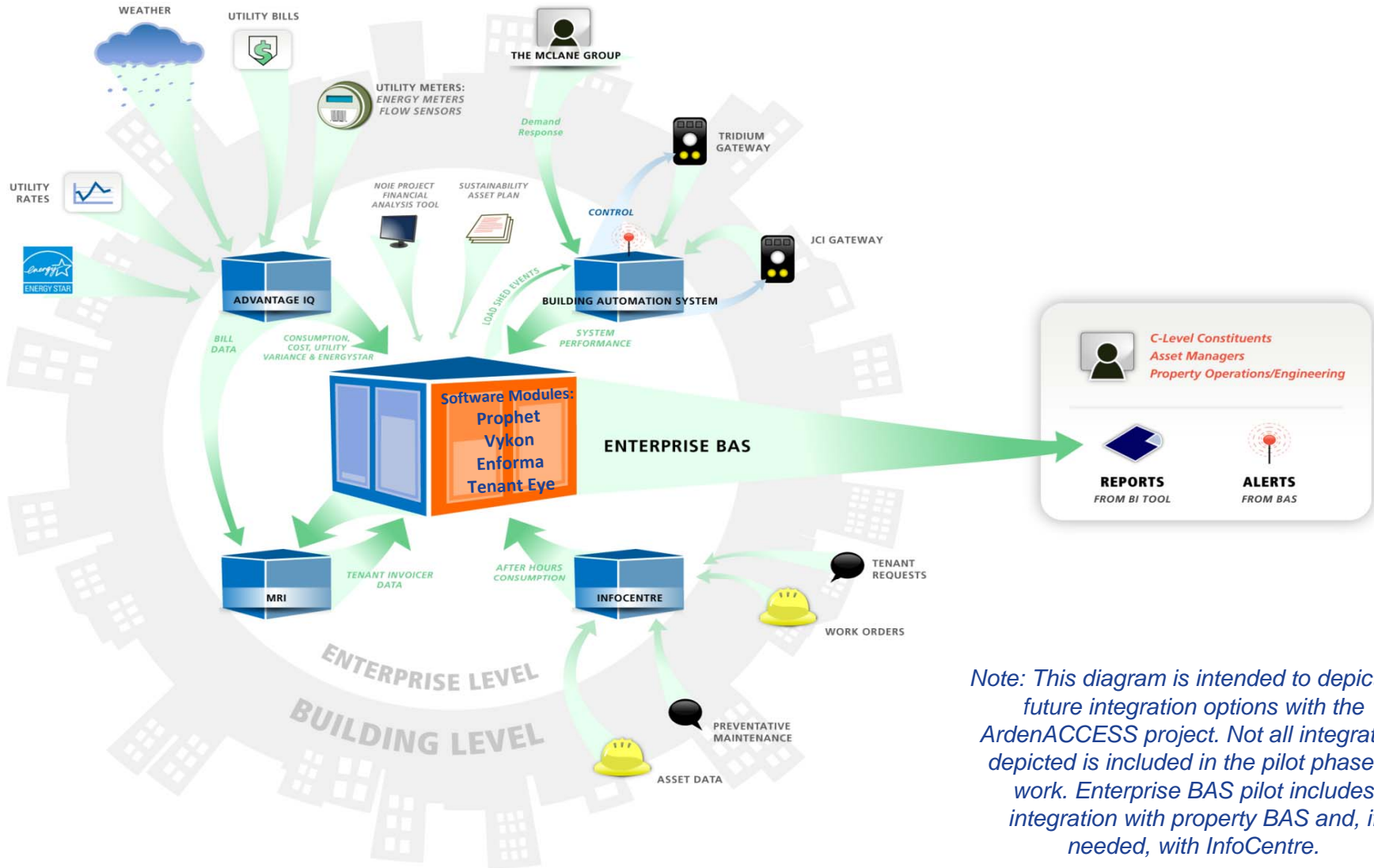
The key capabilities of the Enterprise BAS platform are outlined below.



Arden Access Software Framework

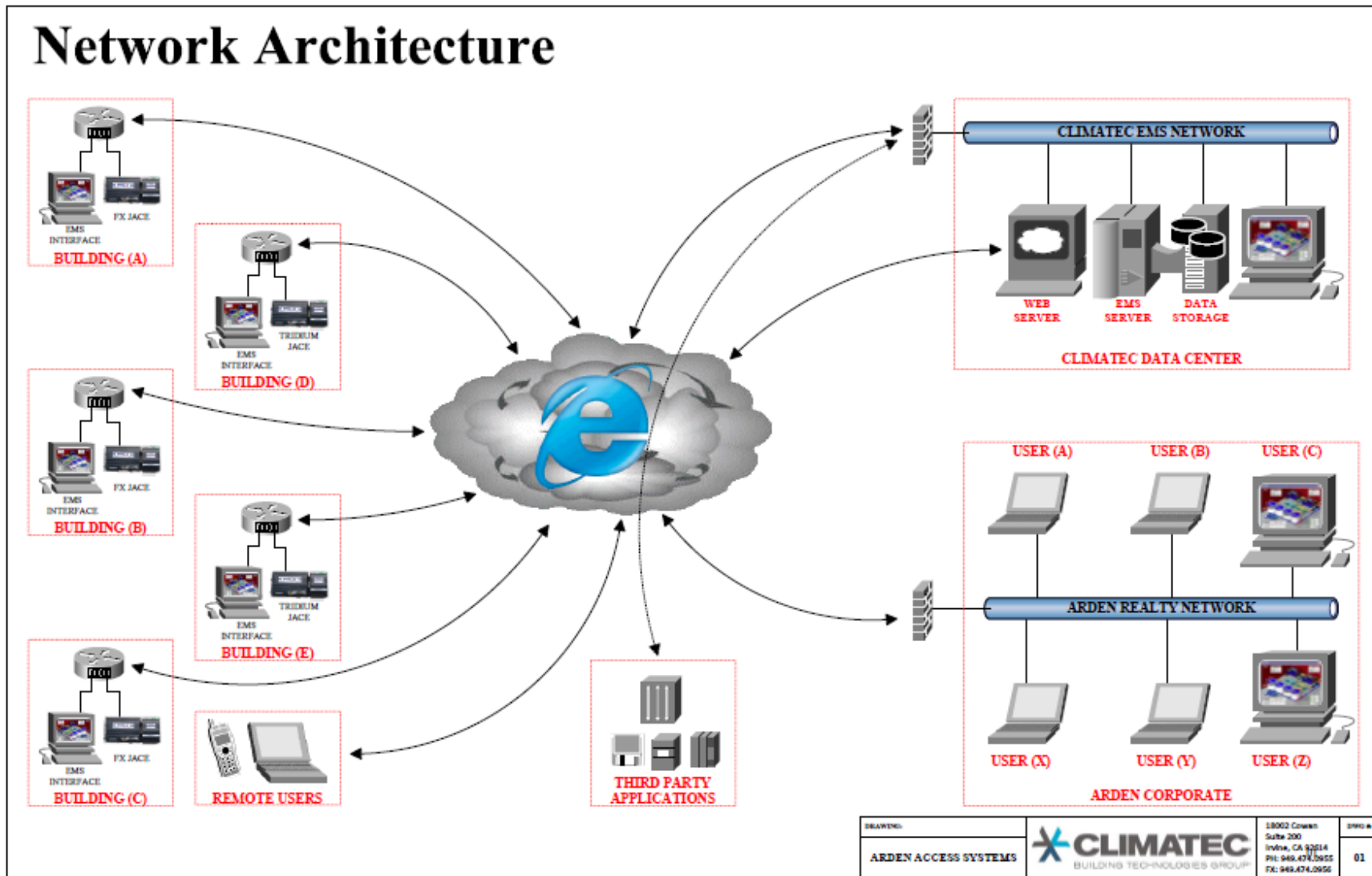


Future Systems Interrelation

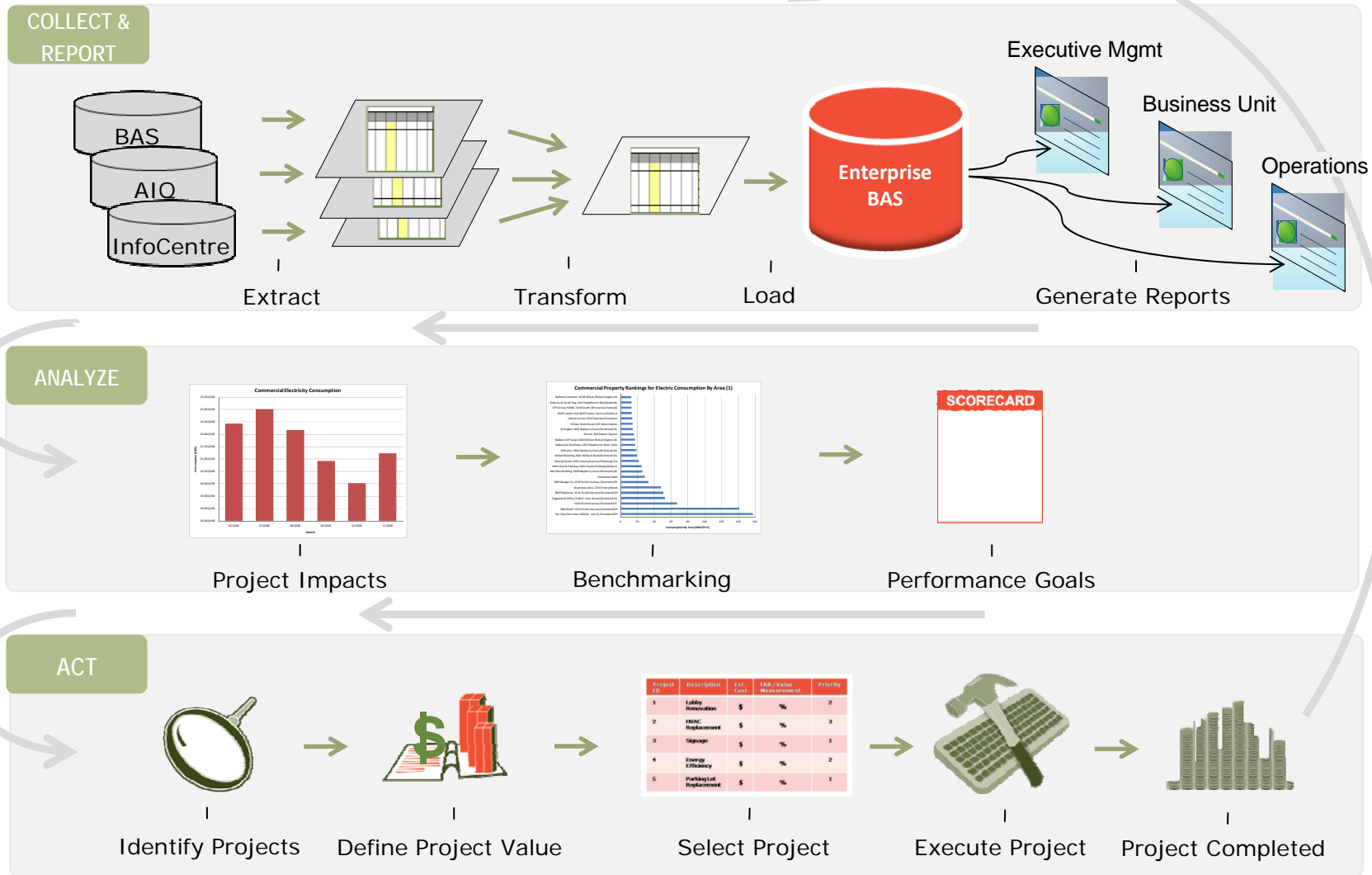


Note: This diagram is intended to depict the future integration options with the ArdenACCESS project. Not all integration depicted is included in the pilot phase of work. Enterprise BAS pilot includes integration with property BAS and, if needed, with InfoCentre.

Network Architecture



Roadmap Overview

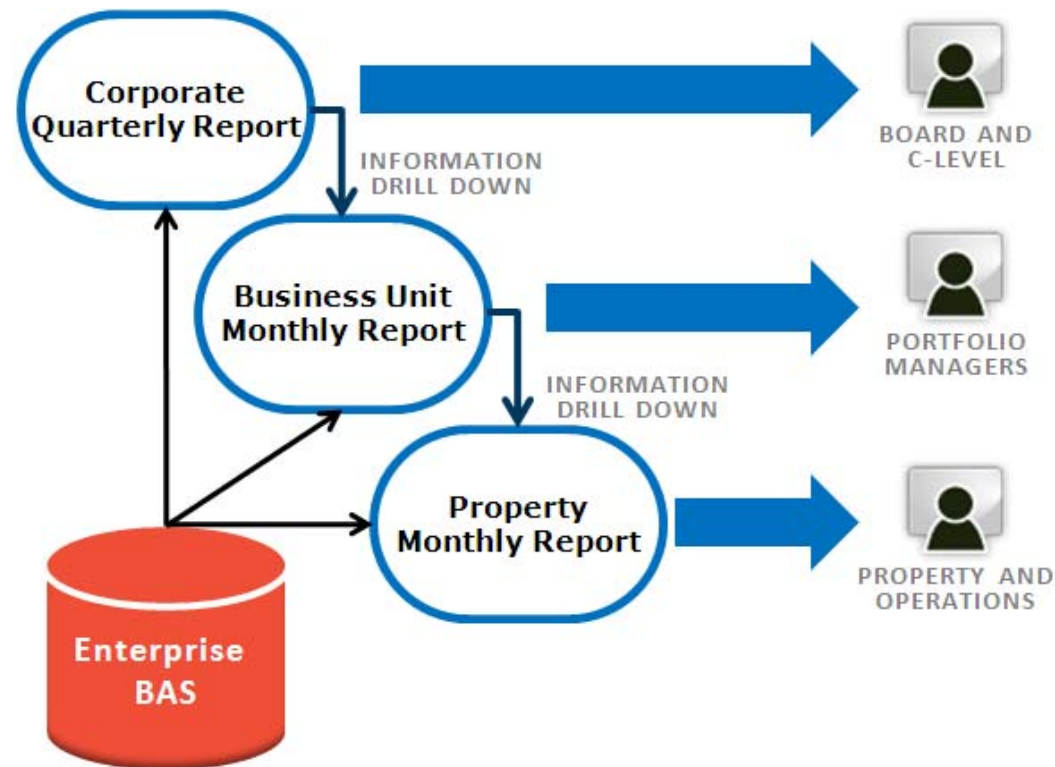


Enterprise Reporting Framework

Reporting Hierarchy

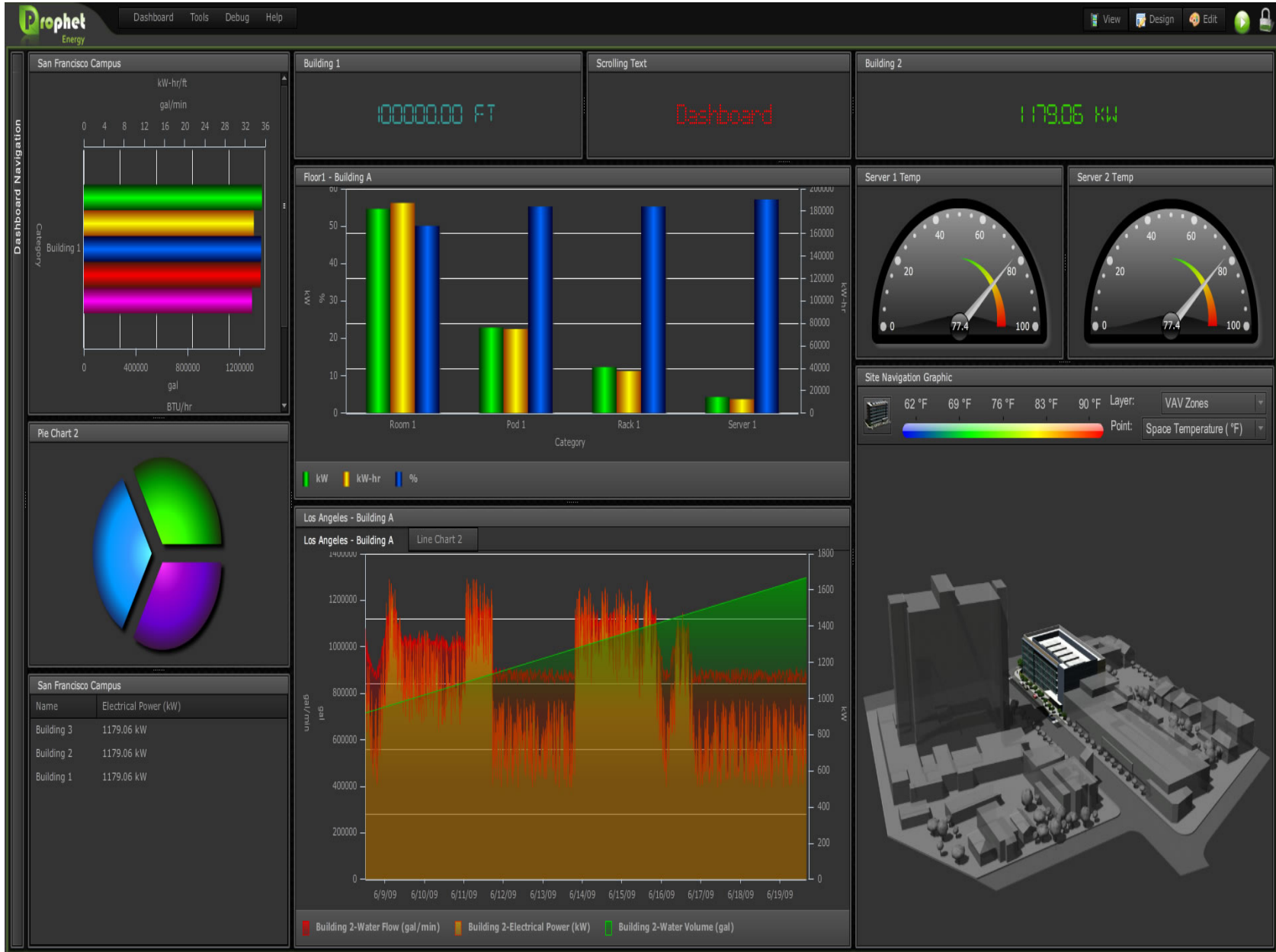
To address Arden's reporting needs, we have chosen a three-tiered approach recognizing different roles and levels require different details of information—levels include executive, manager, and team staff. All levels may desire drill down capabilities at different levels, rates, and interests in the outlined performance metrics.

Key in the proposed reporting framework is the need to present information at a corporate, business unit, and property level.

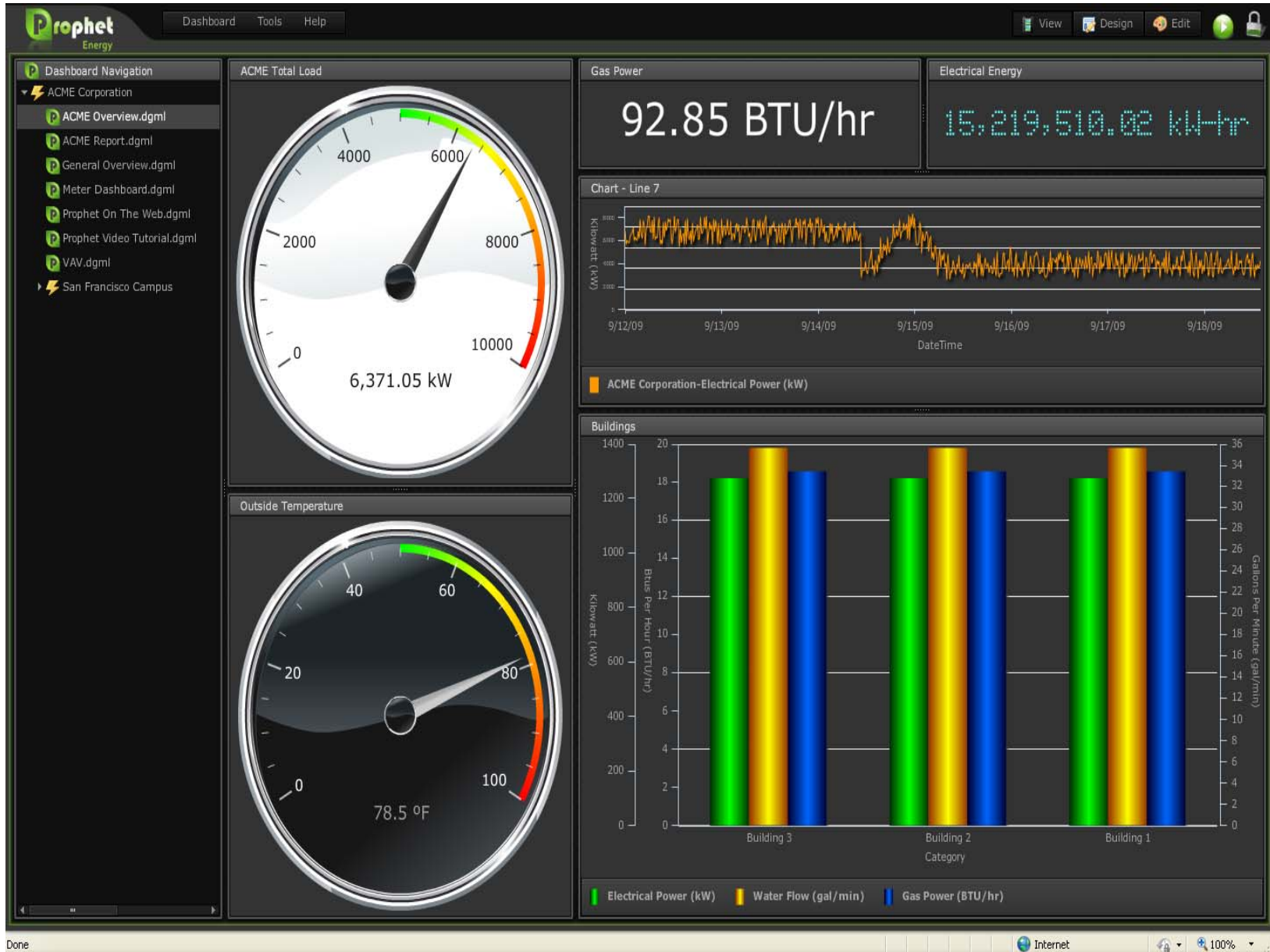


Enterprise Dashboard











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