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URBAN TARIFFS SEMINAR

SUMMARY PAPER

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FOREWORD

Designing a water (and recycled water and sewage) tariff is not easy. There are multiple objectives that cannot all be met (or at least not fully met). There are diverse views within the community on what is fair and equitable; within the water industry on what is appropriate; and among others on what is efficient and effective.

With these issues in mind, the Commission brought together a group of consumer advocates, academics, consultants and water utility practitioners at a seminar on 31 March 2011. This paper summarises the issues raised during the presentations and the discussion that followed.

This paper does not support any one idea over another. Its purpose is to stimulate further thought and analysis, leading water authorities to productive discussions with their customers prior to proposing tariffs for the next regulatory period (five years commencing 1 July 2013).

To contribute to this process, the Commission will:

- publicly release of an Issues Paper in June 2011 and seek comments
- publicly release a water authorities Guidance Paper in September 2011 which will present the Commission's views on a range of pricing and tariff issues.

David Heeps

CEO

Essential Services Commission

Questions for consideration

Readers are invited to consider the issues raised in the Summary Paper. Questions for further consideration may include:

- How important is a uniform, state-wide tariff structure? Conversely, should individual water authorities be encouraged to adopt alternative tariff structures? It is important to note that while tariff structures might be common, levels will vary between water authorities.
- How important and likely are prices to influence customer behaviour with respect to water use? What implications does this have for tariff design for households and businesses?
- What are the risks associated with over/under reliance on the variable component of a water bill? Who is best placed to manage these risks and how is it most efficiently managed?
- How should variable tariffs be set (LRMC, SRMC, average variable cost of supply or others)?
- How should water businesses account for: recycled water; environmental obligations and other environmental objectives; and broader community benefits, in their tariff structures and levels?
- What equity issues might arise in the next regulatory period with respect to the new tariff structures?

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1.1 Introduction

This paper summarises the key issues presented at the Urban Water Tariffs Seminar held on 31 March 2011 that was organised by the Essential Services Commission (the Commission).

The purpose of the Seminar was to hear from a range of water industry participants and experts about some of the key themes, issues and opportunities that are considered important for setting tariffs for the next regulatory period. It was intended that the Seminar would stimulate discussion and inform industry participants on recent developments and work on tariff design.

The Seminar was the first step in the urban Water Plan review process which will be undertaken by the Commission and water businesses over the next two years. The Commission intends to release an Issues Paper on tariffs in the upcoming months. This will be followed by a Guidance Paper later in the year.

The structure of this summary paper is as follows:

1. Background/Context of the upcoming water price review
2. Key tariff concepts including a summary of presentations on issues including price signalling, efficiency, and tariff structures.
3. Customer and business perspectives on tariffs.

This paper summarises key themes presented at the Seminar rather than providing detailed notes.

1.2 Context for upcoming review

Material was presented on:

- the rationale for economic regulation of urban water and the achievements of water policy reform in recent years
- the role of prices and how prices are regulated in Victoria
- the National Water Initiative (NWI) and the National Water Commission's (NWC) Future Directions framework
- the new policy environment in Victoria following the election of the Baillieu Government in November 2010

- tariff issues identified by the Commission in its previous work
- other general observations about tariff design.

1.3 Rationale for economic regulation of water

The rationale for the economic regulation of water was discussed. It was suggested that economic regulation is needed because water businesses are monopoly providers which could use market power to set prices that exceed efficient costs and/or set service standards that are not consistent with community expectations.

Regulators are also in a position to ensure the interests of low income and vulnerable customers are protected.

The challenge of water businesses being able to achieve customer satisfaction was noted – that is, ensuring that the value consumers perceive from the service exceeds the price they pay for it.

1.4 The role of prices and how prices are regulated in Victoria

The importance of the Water Industry Regulatory Order (WIRO) in regulating prices in Victoria was discussed.

When setting tariffs, the WIRO requires businesses to:

- *provide incentives for the sustainable use of water resources by providing appropriate signals to water users about the cost of services and alternative supply choices*
- *take into account the interests of customers, including low income and vulnerable customers.* This requires water businesses to demonstrate that customers have been engaged in decisions on tariff structures and major spending, avoid sudden large price changes, identify impacts on customer groups, and develop policies to address impacts on low income and vulnerable (large household) customers
- *enable customers or potential customers to readily understand the prices charged or the manner in which such prices are to be calculated or otherwise determined.* This suggests that tariff structures should not be overly complex, and should provide clear and consistent messaging.

It was noted that the WIRO is a *propose and respond* model, where the Commission is obliged to approve any tariff structure that is consistent with the WIRO, even if better ones exist. This means that water businesses need to undertake detailed analysis for tariff setting, including:

- developing tariffs which reflect different customer circumstances
- testing tariffs with customers
- managing customer impacts

- demonstrating compliance with Government policy and the WIRO.

The WIRO does not require businesses to:

- design tariff structures to have regard to environmental implications and externalities
- design tariffs to best meet the regulatory principles
- ensure benefits of changes to tariff structures are not outweighed by the costs
- have regard to CoAG pricing principles.

It was also noted that there is very little guidance on recycled water or sewerage tariffs in the WIRO (or in the NWI). Melbourne is one of the few cities with a volumetric sewerage tariff. Some businesses have adopted then removed volumetric sewerage tariffs.

Finally, it was noted that the Department of Sustainability and Environment is currently reviewing the WIRO. The Commission and businesses will need to take this into account when designing and reviewing tariffs for the upcoming Water Plan period.

1.5 The National Water Initiative

The role of the National Water Initiative (NWI) in water policy was discussed and a national perspective on urban water pricing was presented.

One speaker emphasised the need to take into account NWI pricing principles when designing tariff structures. These were endorsed by the Natural Resource Management Ministerial Council and released in April 2010.¹

The NWC is currently conducting the 2011 Biennial Assessment of the NWI, including assessing the extent to which the NWI has improved sustainable water management and contributed to the national interest, and the impact of the NWI on regional, rural and remote communities. The review, which will recommend future directions for water reform, is expected to be completed in mid-2011.

The NWC provided the following initial observations from a national perspective on urban water pricing:

- in regard to progress against NWI actions, a limited set of actions was achieved by 2007
- challenges include prolonged drought and very low storage levels, with urban water having become a critical national issue

¹ <http://www.environment.gov.au/water/policy-programs/urban-reform/nwi-pricing-principles.html>

- responses to these challenges included household water use restrictions, major new investments to diversify supply and new reforms for urban planning and pricing
- pricing had a limited role in response to drought, with restrictions being more commonplace
- there were strong incentives for governments to intervene in water demand and supply due to gaps in regulatory approaches and the absence of price signals for the resource.

The question of whether the urban water sector had got the balance right between the benefits of supply security, and the costs of doing so, was posed.

The NWC has commissioned research papers on administered scarcity pricing, externality pricing and opportunities for competition.

1.6 Victorian policy reform

Several speakers noted that the new Victorian Government's water reform priorities have potential implications for tariff design. For example:

- Under the Government's Plan for water, at least 60 per cent of the water bill will come from the volumetric component
- Recycled water prices will also potentially need to be revised relative to potable water to increase incentives to use recycled water.

Some speakers discussed the *Living Victoria Roadmap* released in March 2011 by the Government's newly appointed Ministerial Advisory Committee (MAC). Key recommendations of the Roadmap are:

- a review of approaches to pricing, in particular the potential to include all the costs and benefits of water supply into prices and not just infrastructure costs
- facilitating greater customer choice and innovation
- establishing a common approach to economic evaluation of different water supply sources.

The Roadmap also noted community concern about the rising cost of water and community support for infrequent and reasonable restrictions.

The Government's decisions on the MAC's recommendations have not yet been made, and the MAC noted that more work needs to be done on:

- options for including the value of water resources into prices
- ways for customers to reveal the value they place on service
- the role of the current pricing arrangements in incentivising or inhibiting integrated water cycle management
- social equity impacts and the design of concessions.

Speakers explored the implications of the MAC recommendations for economic regulation and tariff structure design.

It was noted that the current approach to tariff structures is largely 'set and forget' for the regulatory period, and that nearly all urban water utilities recover costs that are relatively predictable such as infrastructure, operating costs, and overheads.

If implemented, the recommendations proposed by MAC may challenge this because they may lead to:

- a better understanding of costs
- new costs/value that need to be recovered, or
- unexpected changes in costs/resource values within the regulatory period.

However, it was noted that MAC recommendations (if supported by government) are unlikely to be fully implemented in time to be incorporated into tariffs from July 2013. Realistically, policy reform and consequential tariff reform is likely to be an ongoing process. 2013/14 tariffs should therefore be consistent with any specific policy changes, while businesses and the Commission should also be aware of longer term policy directions when developing tariff structures.

1.7 Issues identified by the Commission

One presenter noted that when developing tariffs, businesses should have reference to issues raised by the Commission in recent price reviews and discussion papers.

Issues arising from the Commission's 2007 water tariff structures review included:

- that the relative weighting of fixed and variable components should reflect costs
- uncertainty regarding whether inclining blocks provide signals about cost of supply
- concerns about applying inclining blocks to non-residential customers
- fixed charges based on meter size appear to offer few advantages, and may disadvantage small businesses
- practical issues with pricing plans and scarcity pricing need to be overcome.

Issues arising from the Commission's 2009 Final Decision included:

- a lack of consistency of variable water charges with long run marginal costs, taking into account changes in cost structures resulting from the businesses' large investments in supply augmentation projects
- the appropriateness of an inclining block tariff structure once supply augmentations come into operation and water restrictions are removed.

Presenters discussed a range of tariff concepts during the Seminar including:

- the role of tariffs in providing signals
- the merits of Inclining Block Tariffs
- resource pricing
- efficient tariff design
- dynamic pricing

1.8 The role of tariffs in providing signals

Presentations were made on the importance of prices in signalling information to water users.

One presenter explained that tariffs, in addition to pursuing objectives such as cost recovery and social objectives, can be used as:

- a means for conveying information (*through price*)
- to customers (*the recipient*)
- the implication of certain decisions they may make (*the 'instruction'*)
- in order to influence their consumption decisions (*the purpose*).

The important question is whether specified behaviours can be influenced through tariffs and, if so, how?

It was explained that some behaviours can be influenced by tariffs and some cannot. Using tariffs to signal information is only useful if there is a real prospect of behavioural change. The signal must be received, able to be understood and able to be acted on.

Factors such as practicability, technology limitations and measurement practices meant that there are limits on what decisions can be influenced, for example:

- sewerage usage charges cannot be separately measured
- seasonal distinctions in signals are compromised by measurement technology
- intra-day distinctions in signals would be very expensive to convey.

Signalling information can be conveyed in respect of decisions on:

- whether or not to connect to a water supply service
- whether or not to connect to a sewerage supply service
- how much water to consume (without distinction as to time of day or season) once connected, for example the use of efficient appliances, garden choice, shower duration, toilet flushing. However signals are unlikely to influence such things as use in summer, putting on dishwasher/washing machine at night, or watering garden only in the morning or evening
- with substantial imprecision, how much water to consume in one season, as distinct from another.

However, the signalling information is only useful if there is a prospect of real behavioural change. The presentation suggested that water usage signals can change behaviour, but this is unlikely to be the case for connection price signals.

It was suggested that water tariffs that provide ‘the right signals’ as well as meeting other objectives are likely:

- to have relatively few components, so they can be readily understood
- to signal appropriate water usage with a single variable component that reflects long run marginal cost
- to involve a non-variable component that generates the right level of revenue, whether by positive or negative (free allowance) fixed charges
- not to include inclining blocks
- to involve a sewerage service component that minimises behavioural distortion.

1.9 Inclining Block Tariffs

Several presenters discussed the pros and cons of inclining block tariffs (IBTs).

Common reasons cited for adopting IBTs are that they encourage water conservation and that they promote equity. However, presentations queried whether they achieved these aims.

In relation to encouraging conservation, one presentation noted that data indicates that consumption per person drops significantly as household size increases. IBTs ‘penalise’ large households, but from a water efficiency perspective these households should be rewarded as they have much lower consumption per occupant.

Table 2: Average Annual Household Consumption						
Household size (no. of occupants)	1	2	3	4	5	6
Consumption per occupant (kl)	142	114	89	76	74	68

Source: IPART (2004:15)

In relation to equity, data presented indicates that there is a very weak relationship between water consumption and income. Thus higher prices for higher consumption are unlikely to fall only on high income users. Because they are based on household rather than per capita usage, they fail to distinguish between essential and discretionary use.

It was noted that IBTs will always be less efficient than two-part tariffs because there will only be a single 'efficient' marginal cost but an IBT will have multiple prices. The greater the number of blocks in the tariff, and the greater the differential between block prices, the more inefficient the IBT will be.

One of the presenters also demonstrated that:

- economic efficiency (as measured by deadweight loss) falls as the price threshold increases
- small users can actually be disadvantaged by IBTs as increases in the fixed charge which are necessary to ensure revenue neutrality can outweigh the benefits of relatively lower prices for the first tier, particularly if their consumption is well below the first tier threshold.

The presenter therefore proposed a modified IBT where:

- households are given a 'fair' allocation per person
- households are guaranteed this allocation at a regulated price (would this be at LRMC or lower?)
- households must pay a 'market' price for water used above their allocation
- households receive a rebate per kilolitre for water not used from their allocation.

1.10 Resource pricing

One presenter considered the implications of the MAC's recommendation that options be considered to reflect resource values in prices. Implications for tariff setting and the review process include that:

- introducing resource pricing could (depending on how implemented) create new value/costs, and costs that are less predictable

- allowing for innovation in tariff structures may lead to better understanding of costs, and therefore, need for a dynamic approach to change tariffs
- the Commission should consider these factors in its approach to ‘within regulatory period’ tariff changes.

It was noted that water resource pricing has both supply side and demand side implications. It is important that:

- the demand and supply side implications are assessed separately
- there is clarity about the differing drivers and constraints for supply and demand side reform
- supply side decision makers see efficient pricing for all bulk water resources: if this path is adopted, it is likely to take many years, starting with detailed work
- on the demand side, it is recognized that there are many ‘levers’ and choices that policy makers have that affect the relationship between wholesale prices and the prices that customers pay.

1.11 Efficient tariff design

One speaker noted that because the supply of water typically has a higher average cost than marginal cost, there is a need for water pricing to depart from marginal cost pricing. However, this can be done in a manner that minimises deadweight loss (DWL) for example, two-part tariffs.

Tariff design is considered to have consequences for efficient behaviour, in particular:

- retail tariff design has consequences for consumption behaviour
- wholesale/large user tariffs have consequences for investment in alternatives/by-pass.

A frequently discussed issue throughout the Seminar was the extent to which tariffs impact efficient behaviour. One speaker suggested that important questions were:

- what are the observable efficiency implications of tariff design?
- how significant is any DWL as a result of tariff design?
- what actually influences investment/consumption behaviour?

1.12 Pricing and the demand/supply balance

Several presentations discussed pricing and its ability to act as a tool to manage demand or signal the need for additional supply.

It was noted that in ‘normal’ markets, prices move around to ensure that supply equals demand and provide a signal for when augmentations in supply capacity should occur. However in a traditional regulated pricing scenario prices:

- are typically set on the basis of average incremental cost
- are fixed or locked in to a pre-determined price path and cannot effectively provide signals for demand and supply.

Prices can signal the future alignment of benefits and costs at the margin. However, many demand management strategies that have been put in place have no regard to the use of pricing as a demand management tool. Although the price elasticity of demand is low, it is not zero and hence price can play a key role in reducing demand. Instead, demand-side responses to drought have been managed through interventions such as restrictions or consumer education.

The decoupling of price from the decision making framework also occurs on the supply side. As one presentation noted, decisions on supply augmentations are often made by a third party - Government (rather than the water utility or customers) - for political reasons, with no regard being had to the use of pricing and demand responses to signal customer preferences. This is despite the fact that augmentations (for example desalination plants) can impose extremely high direct costs on water businesses, and restrictions typically impose high indirect costs on customers.

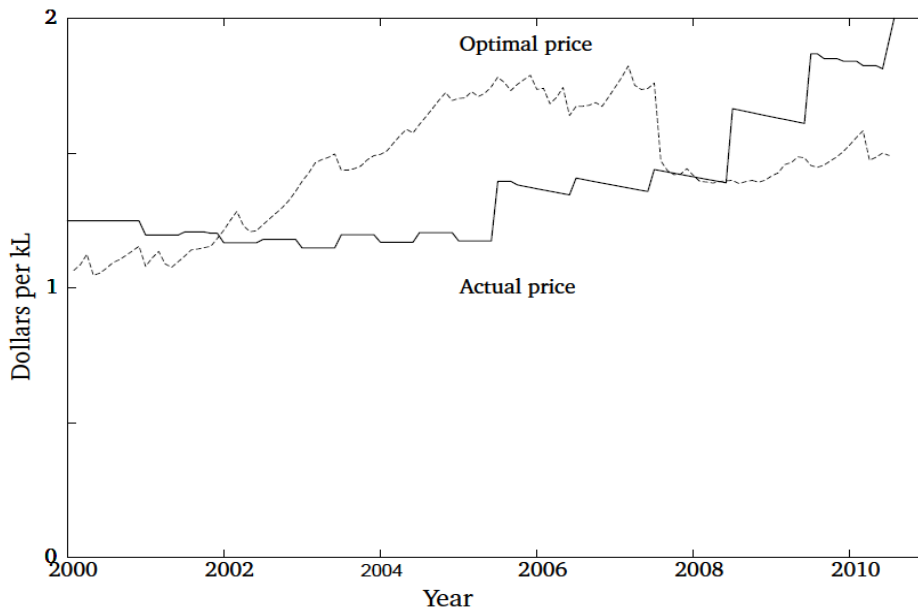
One presentation focussed on the concept of 'dynamic pricing' (sometimes referred to as 'flexible pricing' or 'scarcity pricing'). Under dynamic pricing prices adjust to the demand-supply balance and, in doing so, reflect the opportunity cost of water. Dynamic pricing seeks to ration demand when water is scarce by linking the price of water to its relative availability. Under this approach, the price of water is higher when water supplies are low, sending a message to customers about the value of scarce water.

Forward-looking volumetric water pricing may be desirable because it takes into account that higher prices today (and thus lower present and future consumption) can postpone the need to invest in supply augmentation. It was noted that:

- postponing supply augmentation during a drought until water storages increase when drought ends may generate large payoffs
- the more variable the supply, the greater the benefit of dynamically efficient pricing.

The following diagram provides an example of how the dynamically efficient price has differed from the actual price in Sydney in recent years.

Figure 3: Dynamically Efficient Price and Actual Price over Time



This diagram illustrates efficient versus regulated prices in Sydney.

The paper suggested that the expected welfare costs of volumetric prices, which are inflexible to water storage levels, can be very large: about \$3 billion in present value terms for Sydney or over four times the average water bill per household.

However, another presentation noted that there are a number of implementation issues for dynamic pricing including:

- economic regulation includes criteria other than efficiency, for example understandability, accountability and 'taking account of the interests of customers'
- are customers able to understand dynamic pricing, respond appropriately, and will they perceive it as being in their interest?
- It was suggested that one option is to use dynamic pricing as a basis for a voluntary tariff option offered initially to large water users.

Customer and business implications

Presentations were made by customer groups and water businesses.

1.13 Customer group perspectives

Two customer group representatives discussed the role of tariffs in achieving social and equitable outcomes. Both made the point that tariff levels and structures could not be considered in isolation from such matters as concession arrangements,

demand management policies, hardship arrangements, water-use efficiency and information programs.

Different views were presented about whether IBTs were appropriate. One presentation supported a steep IBT while another suggested that IBTs did not perform well against any measure of social equity, sustainability or efficiency.

One presentation advocated using tariffs as part of a broader access and equity framework, with a hybrid approach encompassing the following:

- A social tariff, with an IBT tariff (including usage and sewerage disposal) and a low fixed charge:
- smart concessions
- rebates per person
- volumetric concessions
- 50 per cent fixed charge concessions
- Efficiency measures such as audits, retrofits and education
- A customer framework
- hardship policies and programs
- case management, not debt collection
- proactive and flexible
- training.

One presentation highlighted concerns regarding the effectiveness and social equity implications of using price as the primary demand management tool. It was argued that evidence supports the effectiveness of information and education approaches to demand management (for example, the Target 155 program) and that restrictions are the most appropriate demand management tool during drought.

A customer group representative also identified the following issues with the current approach to water pricing in Victoria:

- the growing geographical price differences across Victoria. This means that water is substantially less affordable in most regional areas than in Melbourne.
- a need for reform to the concessions framework so that it is more effective at improving affordability, including in regional areas.
- the Government's policy of increasing the proportion of the average bill that comprises variable usage charges will impact tenants, particularly in regional areas. If this reform does go ahead, the government needs to put in place measures that will assist tenants.
- there is strong potential for scarcity pricing to disadvantage vulnerable and low-income consumers. The evidence on the effectiveness of price signals for demand management is also not strong enough to justify such a reform at this

time. There may be potential for this to be mitigated through careful design, for example a pre-advertised scarcity price, on top of an essential use threshold, with the revenue raised spent on reducing water use, beginning in the lowest income areas. However this would need to be researched extensively.

1.14 Water business perspectives

Three water businesses also gave presentations on tariffs in the context of the upcoming Water Plan review. All presentations agreed that the opportunity existed to improve water pricing.

The presentations contained several common themes, which included:

- the importance of consulting with the community before establishing tariff structures. One water businesses said that it has commenced a market research project regarding customer attitudes to pricing, and that it is happy to share the findings with other water businesses
- the challenges in regional areas associated with postage stamp pricing, particularly where service standards and/or the costs of supplies varied markedly between different communities. One presentation noted that applying cost-reflective prices in some smaller communities could result in some customers paying a tariff that is higher than the cost of self-supply. This raises the risk of losing customers
- There was a general community perception that the volumetric component of tariffs remained too low as a percentage of the total bill, encouraged 'waste' and that there was insufficient 'reward' for saving water. However, there were challenges for water businesses in terms of revenue stability, particularly if climate change decreased predictability of demand and supply
- the general community perception that water tariffs were 'too low' had now disappeared and been replaced by concerns about affordability, particularly given increases in the price of other utility services.

Each presentation also discussed the issue of pricing plans – the ability of customers to choose their service levels and/or tariff structure. It was noted that public debate regarding pricing plans had commenced in September 2010 following publication of an article in The Age. One presentation outlined a range of possible pricing plans, which customers may choose to opt into, including:

- a 'no restrictions' tariff which would allow customers with a high need for continued supply to avoid the need to pay for more costly alternative supplies (for example carting). Customers would pay a premium for this service
- a 'scarcity' tariff with a high fixed charge and low first tier price
- optional green or community tariffs with funds from premium prices to be used to contribute to such things as environmental objectives or recycled water for community facilities

The above tariff options apply to different levels of service. It may also be possible for customers to choose from a range of different tariff structure options, yet receive the same service level.

However, issues include whether consumers are sufficiently informed, tenancy issues, revenue certainty for utilities, more complex billing systems and whether charges are cost reflective.

It was agreed that further work needed to be undertaken in relation to tariff plans. These include further consideration of the details of these tariffs, implementation issues and likely community response.

The need for simplicity in tariff design was emphasised. It was suggested that as a rule of thumb “your grandmother or grandson should be able to explain to you what your tariffs mean”. Whilst it is important that tariff structures have sound theoretical underpinnings, overly complex structures are likely to fail the customer understanding test, and their value as a signalling tool will be diminished. The argument was made that some current tariff structures are falling down when measured against this criteria – the sewage disposal charge being a case in point.

One speaker questioned whether tariff design is over-analysed with policy makers, regulators and industry trying to squeeze everyone’s interests into a complex tariff design. It was suggested that consideration be given to simplifying tariff design and that there are broader investment framework issues that if addressed could provide more benefits than complex tariff design.

Other points made in the presentations included:

- it is important not to use tariff design for social engineering purposes
- if customers are to support or accept the tariff structures and levels (that is, perceive ‘value’), it is important that they are able to understand the services they are being provided . This means that water businesses need to consider:
 - better communicating the work that goes on ‘behind the scenes’ to deliver outcomes to customers and the environment
 - the wider adoption of Guaranteed Service Levels
- the link between customer contributions and annual tariffs needs to be considered.

Finally, one presentation noted that key principles to consider when designing tariffs have been developed by Dr Sanford Berg at the Public Utility Research Centre. These principles include:

- revenue adequacy
- revenue stability
- price stability and predictability
- economic efficiency
- recognition of positive and negative externalities
- fairness in cost allocation and avoidance of undue discrimination
- simplicity, certainty, convenience of payment
- ease of collection
- freedom of controversy from interpretation
- understandability and acceptability.